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Volume CLXVI No. 2164 The SPHERE, London, July 12, 1941

THE SPHERE

With which is incorporated "THE GRAPHIC"

The Empire's Illustrated Weekly

London, July 12, 1941

WITH HIS UNDERCARRIAGE SHOT AWAY, A BRITISH D.F.C. PILOT COMES IN TO LAND AFTER A DAYLIGHT SWEEP OVER NORTHERN FRANCE:
A Dramatic Picture Taken During a Recent Operation

Once again the world is thrilling to the exploits of the R.A.F. After their heavy defeat of the *Luftwaffe* last autumn during the Battle of Britain, the pilots of the R.A.F.—both fighters and bombers—are now carrying the war into the enemy's territory, by day as well as by night. The fighters sweep the skies whilst the bombers engage on their task of pushing back the enemy's aerodromes, thus doing what the *Luftwaffe* attempted here last autumn but were unable to achieve. The figures reported by the Air Ministry speak for themselves. This picture was taken at the end of a daylight sweep : a squadron of Spitfires had set out from their fighter station in the south of England, escorting a group of British bombers. As the latter were attacked by German fighters our Spitfires went straight in. In the result six Nazi planes were shot down, some of them breaking up into pieces in mid-air. None of our aircraft were lost, and all came back safely. One D.F.C. pilot, however, received two bullet wounds, and at the same time his undercarriage was shot away : he landed successfully, nevertheless ; and the picture reproduced here shows his approach to the aerodrome, with flaps down and tail wheel still in position—but no undercart !

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A WAR NEWSLETTER —No. 97

1, NEW OXFORD STREET, W.C.1.

Our Envoy in Moscow.—

The Government has expressed its gratitude to Sir Stafford Cripps for his work in Russia in the past year and the King has rewarded his services. The general public during most of the time of his mission did not envy him, regarded him as a man ploughing the sands and as a man often duped, constantly cold-shouldered, and much disappointed in a banishment among politicians definitely unfriendly, very cool and calculating and exceedingly expert in political intrigue, among a people who did not "speak our language" in any sense of that term. I hope our *volte-face vis-à-vis* Russia will not be too ingenuously complete. I did not want to hear any official British "justification" for Russia's attack on Finland, nor any condoning of Russia's pact with Germany. Dignity demands that we should be silent about the past as expediency requires that we should forgive and forget much of it. But we may draw one comforting lesson from Sir Stafford's mission, and indeed that lesson comes from Everyman's experience of his own struggle in this hard and heavy existence of ours. Sir Stafford slogged on in the dark, holding the hand of Truth and Honour, and in due course some reward came to him for his labours when Truth and Honour were at last vindicated. The Russians, with all their cleverness, were duped by greater "cleverness," were disillusioned by the Master of Lies and illusions, and came to see that after all Honesty and Faith and Truth win at last against lies and smartness. Does Life bring any other lesson to Everyman when at the end of his long trick he reviews his career? To slog on in the darkness with faith and honesty and courage—there is nothing else that a man's duty asks of him. His faith tells him, though he cannot see his road, that he is indeed marching towards the light.

The Test of Lenin's Experiment.—

In 1932 Mr. James Maxton wrote these words on Soviet Russia: "In the midst of this doubting, fearing world stands Russia, until a dozen years ago despised among nations for her backwardness, her lack of initiative, her mediæval sluggishness—the outstanding example to the world of a brutal tyranny standing over an ignorant, superstitious, terrorised populace. To-day, while the rest of the world sends out cries of despair and discusses the possibility of bankruptcy, from Russia there come confident reports of great industrial and agricultural developments, the erection of factories, electrical plants, the organisation of huge farms with all the finest mechanical aids, the rapid spread of literacy among a previously illiterate population, and the development of technical skill among an unskilled people. Whence came the impetus?" The impetus to which Mr. Maxton referred was, of course, Lenin. And now another decade has passed and Lenin's great experiment is being tested in a fire fiercer than Mr. Maxton anticipated. The great machine is turning over to war production and it may be fairly assumed that Lenin himself envisaged that the great reforms and industrial and social organisations which he developed must be war-proof as well as peace-proof. In this second decade from the rise of the Soviet Republics much that Mr. Maxton spoke of has utterly changed. The "supreme example of a brutal tyranny standing over a terrorised populace" has been replaced by a more monstrous example in Germany, and one nation at least which was wringing its hands and crying bankruptcy has taught the world what unity, courage, and resolution can do against tyranny. Mr. Maxton must be watching Russia to-day, with even more anxiety than I, for evidence that the great experiment he so admired is proof against all the testings of circumstance.

Mr. Herbert Morrison, Home Secretary and Minister of Home Security, in conference with the Regional Civil Defence Commissioners—*An official photograph taken at the Home Office*

Reading round the table, from left to right, are seen the following: Mr. Robert Richards, M.P. (Wales); Colonel Sir Gerald Bruce (Wales); Sir Ernest Gowers (London); Lord Dudley (Midlands); Sir William Speens (Eastern); General Sir Hugh Elles (South Western); Mr. William Mabane, M.P., Joint Parliamentary Secretary, Ministry of Home Security; Mr. Herbert Morrison, M.P.; Miss Ellen Wilkinson, M.P., Joint Parliamentary Secretary, Ministry of Home Security; Sir Auckland Geddes (South Eastern); Sir Harry Haig (North Western); Mr. Harold Bulter (Southern); Lord Trent (North Midlands); Sir Arthur Lambert (Northern); General Sir William Bartholomew (North Eastern). Standing on the left is Sir George Gater, Secretary to the Ministry; and on the right, Mr. Harold Scott, Deputy Secretary

General Wavell.—

General Wavell's supersession came as a surprise. We need not regard it as an unpleasant one, nor cite examples from the late war of political vendettas or efforts *pour encourager les autres*. Put yourself in Wavell's shoes. Estimate his great achievements. Try to weigh the strain which he has been bearing so long in form so concentrated. Throw in the weather, and ask yourself if at the end of it he could be the man he was when he began his task. No man with *his* responsibility could remain unmarked. It would not surprise me if Admiral Cunningham were to bow to the exorable decrees which govern human powers. His responsibility must have been even heavier and more continuous than General Wavell's. New men and new blood, new strength and new ideas, fresh impetus, these things are constantly needed in war, as one by one our best men wear themselves out. It is better to go before the strain tells on leadership, and what is true of military leaders is not less true of civilian and political. Nay, it is truer. For the best men available were put at the top in the fighting Services. In the civil departments leaders are sometimes chosen after more elaborate and less starkly practical calculations. The strain is just as heavy on the Nazis. If the Nazi chiefs outstay their usefulness at their posts, so much the better for us. Already some of them are showing their scars and lapses. Hitler, Goebbels, Göring are not the men they were. Nor for that matter is Benito Bombastes.

Red Rag to a Bull.—

There are one or two Members of Parliament who assume in different fields—foreign relations, conduct of the war, strategy, and so forth—a certain omniscience, and self-granted authority to question and criticise, at question-time and by intervention in debates, which does not seem to the public to be justified by the abilities and standing of those members. Parliament may think differently, since they sit down under these self-appointed spokesmen and critics. It is a pity that the most constant and active of these questioners and critics are alike red rags to the public and to the chief Ministers. Mr. Belisha's exchanges with Mr. Churchill concerning Mr. Lyttelton's appointment as a Minister-of-State resident in the Middle East was an instance in point. The appointment is indeed a departure from precedent. It may be sound, like General Haining's appointment to a post which has not been filled since the seventeenth century. It is none the less so far a departure from precedent that the House might well show surprise and annoyance at being curtly denied an explanation when it was asked for. Mr. Belisha, somewhat hurt at the curt rejection of his request by the Premier, justified his "curiosity" with some colour and with some support from the House. And indeed in the circumstances Mr. Churchill appeared to be more than usually dictatorial. This may be explained, if not excused, by certain obvious causes. The sultry weather, the great strain on Mr. Churchill's nerves, and not least by Mr. Belisha's manner. I used to think that Mr. Mander was "too much with us" in *Hansard*. No man should elect himself the Foreign Affairs Jack-in-the-box of question-time. And Mr. Belisha must be aware that his manner is not always conciliatory and that the rights of Parliament in times of crisis like these, when tempers are short and nerves strained to breaking-point, might be better served and safeguarded by questioners and watchdogs less irritating and less assumptive of omniscience and authority. There are times when it is patriotic to ration one's egotism.

Morse and Beethoven.—

In a recent "talk" Colonel Britton urged the peoples of occupied territory to tell their friends about the "V. sign," and to see that everywhere its Morse equivalent (dot, dot, dot, dash) is tapped out into German ears and the letter "V" chalked up for German eyes to see. The letter "V" stands (he said) for Victory, and Germans know it. Colonel Britton then played certain bars recurrent in Beethoven's V Symphony—that famous, recurrent "tut tut tut tum," which has always been held to signify "Destiny knocking on the door." Now the 5th Symphony, which in my mind ranks in its own sphere *facile princeps* (as Rembrandt's *Night Watch* and Jane Austen's *Pride and Prejudice* in theirs) is regarded as being the supreme picture in music of a man's life, with its opportunities and its disappointments, its triumph and disillusion, its yearnings and regrets, its fevers and ultimate peace when the soul has struggled clear of its muddy vesture of earthiness and materialism; and no doubt at all that knocking phrase was intended to signify the summons to a man to take the golden opportunity which Life offers to the brave and to the resolute. I did not hear Colonel Britton's talk; he was not *reported* as having referred to the *locus classicus* of the "Destiny" theory in the 5th Symphony. It is to be found in one of the more brilliant chapters of Stevenson's *Ebb-tide* where the beachcombers are sprawling before the old calaboose, waiting for something to turn up. Herrick, you recall, had just scrawled on the wall in idle vanity this same famous phrase. Davis comes back with a proposition for mending their fortunes. "What 's that?" he cried, pointing to the music on the wall. "Oh, that? It 's music. . . . It means Destiny knocking on the door. . . ." "Destiny knocking on the door," repeated the Captain. "Well, Mr. Herrick, that 's about what it comes to." I am engaged just now in teaching the Morse code. Our Destiny is knocking at last on the door. I hope the "V" sign will be quickly and deeply imprinted on the memories and wills of all who hear or read my words in the H.G. and British Empire. Victory lies ahead, if we answer Destiny's knocking on the door.

Incorrigible Waste.—

When the party of Imperial troops who invaded our grounds and spent forty-eight hours with us, packed their lorries and left, they left behind pleasant memories of their individual charm and good nature, and also some things less to their credit. We went forth with buckets to clear up the litter and collected, among the inevitable cartons and paper, enough food of high quality to feed twelve children with a substantial meal. There were ten large "doorsteps" of new bread, buttered thick and spread with jam, thrown away uneaten. There was meat and many excellent biscuits. There was a 7-lb. tin of butter, so negligently emptied that it provided a very large dish-pat for a table. No officer visited this party during its stay in our woods. No officer saw the party off. The sergeant-in-charge attended to the proper "dousing" of the fires; and of equipment only twenty-five petrol containers were dumped. The rest of the old metal was certainly junk. The Army is for ever denying waste, for ever stressing the measures taken to prevent it. What need is there of further witness that waste is still rife in the Army, even among disciplined, well-mannered troops? It is a crime.

THE OLD STAGER

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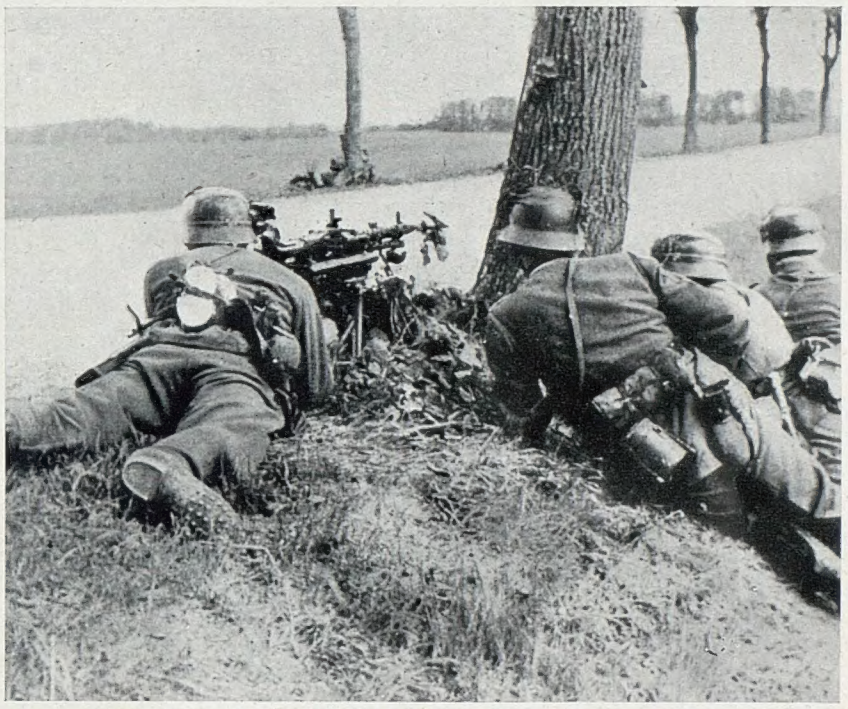
The FIRST PICTURES from RUSSIA

As Usual, These Come from the Enemy: They Have Reached Britain by Way of New York

A NONCHALANT RIBBENTROP ANNOUNCES THE INVASION OF RUSSIA : Germany's Foreign Minister is here seen reading the Note of the Reich to the Soviet Union in the Council Hall of the Foreign Ministry in Berlin. The speech was broadcast to the whole world. Seated from left to right are Foreign Office Minister Weizsaeckecker, Press Chief Dietrich, von Ribbentrop, Foreign Office Minister Schmidt, and Propaganda Ministry delegate Brauweiler

WRECKED RUSSIAN TANKS IN A FRONTIER TOWN : This picture was sent by wireless from Berlin to New York. It was then flown to Britain by Clipper mail *via* Lisbon. According to the Nazi caption, it shows wrecked Russian tanks surrounding a statue of Lenin in a town on the Russo-German border. All the pictures reproduced on this page have been issued by the Propaganda Ministry in Berlin, who have always recognised the value of speed in the dissemination of German-coloured "news"

THE FIRST ADVANCES INTO RUSSIA WERE MADE WITH HORSED TRANSPORT : One of the most interesting features of the first few days of war between Russia and Germany was the employment by the latter of horsed transport, which, contrary to the general belief, has never been entirely abandoned by the German Army. An enemy infantry unit has gone forward ; and here the horse-drawn carts are seen bringing up the men's equipment



A GERMAN MACHINE-GUN NEST ON THE BORDER : Soon after the outbreak of hostilities between the two countries it became apparent that Germany was prepared down to the last button—as usual. She had taken her own moment to attack her former friend, and had waited until every one of her arrangements had been completed ! This machine-gun nest was located in a ditch commanding an important road near the Polish-Russian border

JUNE 22, 1941—DAWN : The day on which Germany invaded Russia, the German frontier guards were fully prepared. Here a detachment is seen hiding under cover of a railway embankment awaiting orders to advance

GERMAN INFANTRY GO FORWARD TO THE ATTACK : Where this picture was taken is not disclosed by the Germans. So far, the struggle has been mainly a clash of tanks, with the infantry a long way back, striving to reach the forward areas in support of the mechanised units

NIGHT FIGHTERS: A picture taken actually during the progress of the great night battle of May 10: On that night, readers will recall, the success of our Night Fighter patrols reached a climax: thirty-three of the enemy bombers concentrating on London were shot out of the skies, bringing to an end a period when the Nazis were punished as never before. The three pictures reproduced here were taken actually when the night battle was in progress. The view above shows a scene in the "Dispersal Hut" of the Night Fighter squadron: the lights have been dimmed to save the eyes of the crews, some of whom are gathered round the stoves whilst waiting to go up. They are keeping themselves warm by drinking hot chocolate

THE WING COMMANDER (refreshed by rest and all set for the night's work) talks over the plan of campaign with his Sergeant Air-Gunner before going up to take part in the Night Defence of London

BACK FROM THEIR SUCCESSES AGAINST THE NIGHT BOMBERS, the pilot (wearing the ribbon of the D.F.C.) and his gunner discuss their adventures of an hour ago. They are back in the "Dispersal Hut" after having made their report

NIGHT FIGHTERS AND DAYLIGHT BOMBERS

New Official Air Ministry Pictures

On right – Because of the disorganisation of his road and rail transport in Germany and the Occupied countries by the relentless attacks of the Bomber Command, Hitler has been forced to use coastwise shipping on a considerable scale : the result is that the R.A.F., always quick to seize new opportunities, now maintains a ceaseless sweep of the seas from Narvik to Brest. Daily reports of the sinking of enemy supply vessels and their escorts show how complete is the domination of the R.A.F. by day. The accompanying picture was taken at one of the many R.A.F. stations in Britain from which Blenheims operate against enemy shipping in this latest phase of the air war against the Nazis

WONDERING HOW THE OTHERS GOT ON ! Back from a successful raid on enemy shipping, the crew of a Blenheim look back as they leave their aircraft to watch the following aeroplane also land safely. The first crew have already been met by their commanding officer

TAKING PART IN THE AIR BATTLE OF THE ATLANTIC: The "strike" crew of a Catalina speeding out to their flying boat by launch. This crew has to stand by during their spell of duty in full kit, complete with rations, ready to take off at a moment's notice

This picture was taken in an Ulster Lough which is used as a Catalina flying-boat operational base for Atlantic patrols : it is a focal point in the Air Battle of the Atlantic. From this Northern Irish base came the Catalina which located the German battleship *Bismarck*, shadowing her for many hours until relieved by other Catalianas pending the arrival of naval units. These huge American-built flying boats, with a range of 4,000 miles, carry a crew of nine and, with the regularity of a bus service, maintain an extensive system of patrol over the Atlantic, day and night, one plane often remaining in the air for as many as twenty hours on end, the whole time in co-operation with the Royal Navy. A similar service operates from Canada, and the "No Man's Land" of the Atlantic—the area in which convoys are without air protection—is thus being steadily diminished

THE NEW, FAST AND DEADLY BRITISH TANK, THE "VALENTINE"

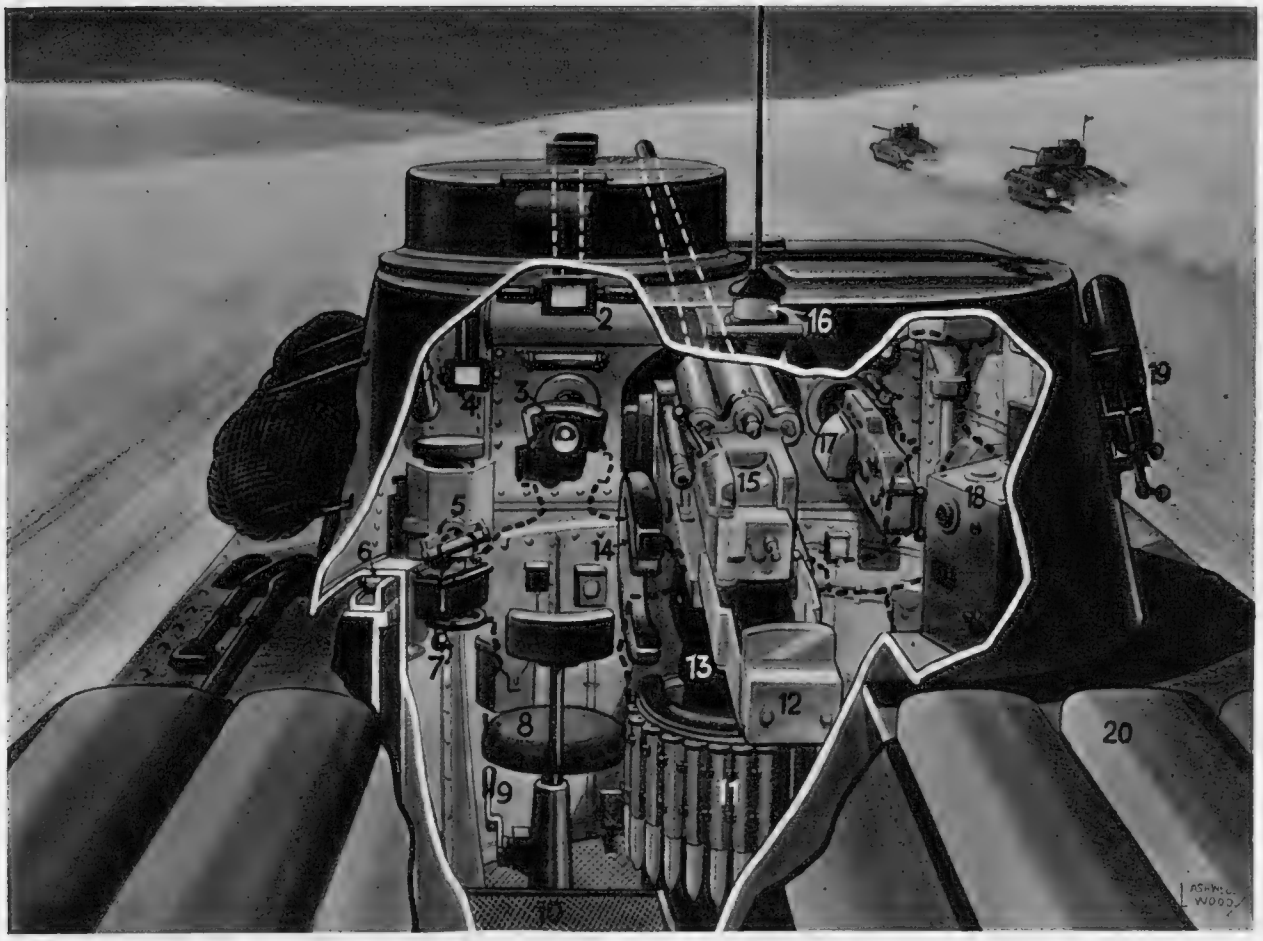
THE NEW, 16-TON, "HEAVY INFANTRY TANK" WHICH IS NOW BEING DEVELOPED FOR WARFARE ON LAND

Lord Beaverbrook is now in charge of tank production : everybody is confident, therefore, that this new essential arm of warfare on land will be developed as rapidly and successfully as was our aircraft production. The impressive picture above shows a group of our newest and best tanks in operation during recent exercises in this country. These tanks—the "Valentine" Mark III—are the direct successors of the "Waltzing Matildas" made famous by the Australians. "Valentine" weighs 16 tons, carries a crew of three, is highly manœuvrable, and has a speed on the road of 15 m.p.h. In the main turret, besides a quick-firing Besa machine-gun is a two-pounder capable of piercing any tank as yet met with in any German armoured formation. The "Valentine," considering its weight of armour and guns, is more comfortable to handle than the 26-ton "Waltzing Matilda" ; "it can cruise across open country like a car travelling along a good road." These mighty tanks are now being produced in ever-increasing numbers, and they are being manned by crews who have been specially trained

HOW BRITISH TROOPS WILL CARRY OUT AN INVASION WHEN THE TIME COMES

MR. WINSTON CHURCHILL WITNESSES AN INVASION EXERCISE CARRIED OUT BY BRITISH TROOPS IN SCOTLAND

Now that everybody is thinking and talking invasion—invasion of German-held territory, not invasion of Britain !—more particular interest attaches to the picture reproduced here. It was taken during the Prime Minister's recent visit to Scotland, when he witnessed invasion exercises and also inspected troops and equipment, accompanied (amongst others) by Admiral of the Fleet Sir Roger Keyes. In the picture one of Britain's power-driven invasion barges is seen drawn up on the beach. In this the troops have been conveyed to the point of attack. Carrying automatic guns in addition to their rifles, the soldiers then charge up from the sea. Note the ladder on the left which the soldiers use for surmounting the barbed-wire defences



INSIDE A BRITISH TANK: The very complex array of instruments and gadgets—*Drawing by L. Ashwell Wood*

In this drawing the dotted lines represent the positions occupied by the gunner (on left), and gun-loader and wireless operator (on right). The commander (not shown in the above drawing) stands on a platform behind the gunner. The figures indicate the following: 1. Camouflage net (stowed); 2. Commander's periscope; 3. Gunner's sight and brow pad; 4. Gunner's periscope; 5. Hydraulic turret traversing gear; 6. Roller bearings for turret; 7. Hand-operated traversing gear; 8. Gunner's adjustable seat; 9. Seat raising and lowering gear; 10. Commander's platform; 11. Two-pounder shell rack; 12. Counter balance weight of gun; 13. Spent shell-case bag; 14. Shoulder and arm piece for elevating and depressing gun; 15. Two-pounder quick-firing gun; 16. Wireless insulator and aerial; 17. 7·92-mm. Besa machine-gun; 18. Wireless; 19. Signal rockets; 20. Air cowls for radiators (very essential, especially in the heat of the desert)

THE MOST DECISIVE FACTOR IN MODERN WARFARE—

THE TANK

—Fully Described and Illustrated

IN the important phase now developing in the Russian theatre of war it is clear that the tank is destined to play an increasingly important part in deciding the issue. It is by no means certain that the Nazis are going to have matters all their own way, since they are opposed for the first time on any front by an equal, if not a superior, number of these machines and by men who are as fatalistic in their disregard for the losses entailed as are the Germans.

The modern tank, brought into being in the last war, embodies the qualities of fire power, mobility, protection, shock action and crushing power. It appeared first in 1916 at the Battle of the Somme, which was the first test of the tank in action. It was produced by William Foster and Co., Ltd., and was named Mark I Male and Mark I Female. It is of interest to give some comparison with the tank of to-day.

The first tank carried a crew of eight, and required four men to drive it; gunners sat on bicycle saddles attached to the guns. There was poor means of entrance and exit, bad ventilation; the exhaust was noisy and visible at night. It had a maximum speed of 3·7 m.p.h., weighed 30 tons, and could only carry sufficient fuel to take it 12 miles. Can one imagine this rattling contraption facing a battery of modern anti-tank guns? Yet at that time, in spite of being a clumsy slow-moving vehicle, it proved to be irresistible; it was impossible to stop its advance by the defence armed with ordinary rifles and guns not designed for that purpose, unless it broke down on its way, which it often did. But in the end the Germans began to evolve useful anti-tank weapons, which made the experts conclude that this vehicle must depend in future on its speed for defence, with the result that the light tanks became the order of the day.

Early in 1918, the Germans, having received the present of the idea, as usual, produced the A.7.V. This was a larger type of tank built by the Daimler Motor Company. It was 33 tons in weight, carried a crew of eighteen, its speed was 8 m.p.h., with a fuel capacity sufficient to take it for 50 miles. They also used on occasions some of the captured British tanks. When Hitler seized power in Germany, his military advisers concentrated on building up vast mechanised forces, and when in September 1939 he attacked Poland they had the opportunity of trying out the light tank in full-scale operations. They soon realised the mistake and promptly scrapped the majority of them in favour of the heavier and better armoured models.

So far in this war they have used their Panzer divisions, of which the tanks are an important part, as a spear-head thrust. The tanks are the head of the spear, the motorised columns are the shaft, and the following divisions correspond to the body of the man, who throws the spear swiftly forward. To give some idea of a Panzer division, apart from the 48 heavy tanks, 84 medium tanks and 252 light tanks, it also consists of 230 troop-carriers, 96 gun tractors, 258 armoured motor-cycles, and has attached to it 27 dive-bombers, not to mention nearly 1,000 other service vehicles and 4 battalions of motorised infantry, engineers, signallers, etc.: in fact, everything on wheels.

The further evolution of this modern Juggernaut was assisted by the revolution in metallurgy, which produced alloys not only tougher and stronger, but also lighter than any in use before. Robert Hadfield, in Britain, experimented with a hard mineral known as manganese; Harvey, in America, introduced carbon; and Krupps, in Germany, have gone further by adding chromium to the nickel-carbon steel to produce what is known as cemented armour. When the Germans invaded Czechoslovakia, they obtained much of the formidable new armour "concrete-steel" from the Poldino-Hut factory at Kladno near Prague, and at Vitkovice in Moravia, which could resist the fire of a 1½-in. anti-tank gun at 500 yards. Since then the Powers have been concentrating on the production of heavier armour for tanks, which resulted in the increased size of the vehicles, and to-day the heavy tank weighs anything up to 100 tons or more and travels at 60-70 m.p.h.

Events since the outbreak of this war amply demonstrated the vital importance of this new and formidable weapon. The modern tank has gone a long way from its "ancestor" doing a maximum of 8 m.p.h. The campaigns in Poland, France and more recently in Libya proved its demoralising effect beyond the possibility of doubt. Used in a determined manner, it breaks up the defence by deep penetration behind the enemy positions, prepares the way for the lighter mechanised vehicles carrying troops and supplies, and reduces the loss in men to a minimum. General Wavell proved what a comparatively small number of tanks plus superb tactics could accomplish, when earlier in his drive against the superior forces of the Italians he chased them from Mersa Matruh to beyond Benghazi. In that epic drive the tank played an important part, leaving no doubt as to the superiority of the British-produced tanks, which have proved again and again that there is no lack in engineering skill or design, since our tanks in Africa were able to stand up to the most awful desert conditions without serious breakdown, travelling over vast

(*Continued on following page*)

INSIDE A BRITISH TANK: (*On left*) Guns being cleaned and loaded: the shovel-shaped contraption is the protective head shield for the driver. (*On right*) The gunner loading a machine-gun

Everybody in a tank crew must be trained and ready to take over the other man's job at a moment's notice. Men selected must understand the complexities of machinery and must be able to absorb technical training quickly. There is no steering-wheel, the tank being guided solely by left and right levers. One point to remember is that tanks cost approximately £25,000 each, equivalent to five Hurricanes: there would be no sense, therefore, in having a crew who could not shoot straight!—hence proficiency in gunnery is all-important. All the crew must have good physique to stand the strain of hours inside a moving tank

THE DECISIVE FACTOR IN MODERN WARFARE

(*Continued from preceding page*)

distances at top speed, over a terrain which would have broken the heart of a camel.

With the addition of the more advanced models now being delivered, of a more advanced design, the result might well exceed our expectations. The present tank policy is now settled in favour of the heavy type of vehicle. The light tank is now obsolete and there is no longer a "medium" machine. The new type has much heavier armour, its armament is more powerful, and its speed greater. The favourite tank is the cruiser. There are few obstacles that can withstand the onslaught of these formidable weapons. The men who man them must be specially selected, each of them must be trained and ready to take over the other man's job at a moment's notice. Men selected must have a good educational standard, because of the complexities of machinery and the need to absorb technical training quickly. The driver need not be an experienced chauffeur, for example, because the driving of tanks is very different from driving cars. There is no steering-wheel to a tank, which is guided by left and right levers. The driver must also qualify as a wireless operator and be able to handle a gun.

The greatest problem is the choosing of the right men for gunners. When one considers that the whole purpose of a tank is to put it where the gun can be used to its best advantage, the gunner becomes of prime importance. One point to be remembered is that tanks cost approximately £25,000 each, which is the equivalent of five Hurricanes. Another important point is the repair and maintenance. The men in the tanks are sufficiently conversant with the mechanism of the tank and can carry out certain repairs, but each tank unit has a repair squad attached to it, carrying spare parts and various impedimenta to effect speedy and efficient repairs on the spot. These squads form an important part of tank organisation.

At the moment all eyes are on the terrific, almost Homeric, struggle going on on the Eastern front stretching from the Baltic to the Black Sea. The issue is still in doubt, but one fact emerging from the reports available is that the speedy and overwhelming "victory" anticipated by the German High Command is receding day by day. Reports speak of vast masses of tanks being engaged on both sides, and there is no doubt that Russia has more than 30,000, though it is doubtful if they are superior to the German machines, as the Russian is not a good engineer. The majority of the tanks in Russia have been bought in France, America or Britain, a great number have been built under the respective licences in Russia, and some are home products. Whatever the merits or demerits of the quality and quantity in tanks, after much terrific fighting the Germans are being held. The Russians will lose masses of men and tanks, but so will the Nazis.

Further, America is getting into stride with tank production. Many new models have passed the experimental stage, the most important of which is the "Rolling Fortress," the most powerful weapon of its type in the world. The M-3 medium tank, which is its official description, weighs 28 tons; it is built at the Chrysler Corporation plant in Detroit, Michigan, U.S.A., and is one of the two models which the Chrysler Corporation built before all its tooling for mass production was completed. Before the end of the year hundreds of these rolling fortresses should be coming off the assembly lines. Given time, the vastly superior resources of Britain and America will assure us an abundance of these machines which Germany could never equal.

A NEW "ROLLING FORTRESS" NOW BEING BUILT IN THE STATES: This is the M-3 medium t which is being built at the Chrysler Corporation's plant at Detroit; it has just been delivered to U.S. Army. The picture above was taken during tests and shows a shell being fired from its 75- cannon. The M-3 weighs 28 tons; it is one of two models which the Chrysler Company built before its tooling for mass production was completed. Before the end of the year, hundreds of these powe machines—the most powerful of their type in the world—should be coming off the assembly lines. addition to the 75-mm. gun, there are four machine-guns, sub-machine-guns and a 37-mm. anti-aircraft

FIRST THE ANTI-TANK DITCH: Now comes the ramp for overcoming the anti-tank ditc This specially-designed ramp is placed across the anti-tank ditch—and over goes the tank. It is American idea which has been tried out during U.S. Army exercises in Virginia

MODERN WARFARE: THE ARMY'S NEWEST CORPS GOES INTO ACTION—THE RECONNAISSANCE CORPS IN TRAINING

This picture was taken in Northern Ireland, where Britain's new Reconnaissance Corps—the cavalry of the Mechanised Forces—is now in training. Nobody in this Corps marches on foot—there are armoured cars, scout cars, lorries, carriers and motor-cycles; the large-scale unit of special infantry, very heavily armed, moves everywhere on wheels. The place of the new Corps is in the front line of attack, as it is the fastest moving unit of the entire Army: its job is to spy out the terrain, engage the enemy with every kind of automatic arm, and to send back its informatio by radio. Each unit is self-contained and is able to stand on its own—carrying its own supplies food and petrol, mobile office and repair outfits. The infantry are especially tough: their princip weapon is a powerful mortar which fires so fast that it is possible to have 14 shells in the air one and the same time: the mortars can go into action within 14 seconds!

A BRITISH CRUISER-TANK OPERATING IN THE TERRIFIC DESERT HEAT—*Drawing by L. Ashwell Wood*

Recently the Western Desert has been experiencing a record heat-wave: even in Cairo the temperature has been 119 deg. in the shade! Under such conditions the weather is almost unbearable, and nearly every part of a tank is almost too hot to touch—certainly too hot to operate from within! The difficulties faced by the crew in desert tank warfare are serious, even when the weather is not too hot: when all the hatches are closed, as is essential when the tank goes into action, the heat inside is terrific—to say nothing of the noise. The strain on the crew must be appalling. As soon as the action is over, up go the hatches and all sights. The engine is almost better off than the men, as cooling of this vital component is automatic, as shown above

HOT WEATHER WARFARE

Conditions in the Libyan Desert Amidst the Heat and the Sand

Described by Major C. S. JARVIS

OUR troops operating in Libya are now experiencing the full blaze of the summer heat, which will continue with slight variations in intensity until the middle of September, when, with the approach of autumn, there will be an appreciable cooling off. The temperature in this desert at the present time depends upon the distance from the sea, and on the coast and for some fifteen miles inland the daily thermometer reading will average between 80 deg. and 87 deg. only, but it is a damp and enervating climate, despite the apparently cool north-west wind coming in from the Mediterranean. A few miles inland, this local humidity is replaced by intense dryness, and here the heat will run about 102 deg. at midday, with a very definite cooling off and freshness at night, which is not a feature of the coastal climate.

The period of the hot sandstorms from the south—the *Khamsin* as it is called—is now over, and, speaking generally, there should be no further gales of this description until the break of the summer weather in October, when hot winds, usually presaging rain, may occur. The word *Khamsin* is Arabic for fifty, and the Arab theory, which is usually correct, is that after the first southerly gale, which will occur some time in April, similar gales may blow up at odd intervals during the next fifty days. This year the hot sandstorms began their fifty days' course at the latter part of April, and, judging from the war communiqués, our recent push west of Sollum coincided with what may prove to be the last gale.

The drawback to the employment of motorised vehicles in the desert in war is the impossibility of concealment when on the move owing to the columns of dust they raise. It is possible to look out from high ground across the desert and to see distinctly with the naked eye at a distance of five miles or more a small dense cloud of dust travelling like a snake across the dun-coloured waste, and, if this is the result of one small patrol-car moving, the huge column of sand raised by a force of any size, and composed of much heavier vehicles, can easily be imagined.

Movement by night without head-lamps, except on made roads, is impossible, unless it is carried out at a walking pace over a most carefully reconnoitred route.

A BRITISH TANK OF THE SAME TYPE AS THAT SHOWN IN THE DRAWING ABOVE: This shows the position of the crew—driver below, gunner on left, and commander in the hatch on right. When in action all these openings are, of course, closed. The specially-designed helmets are to prevent concussion during motion

Car work in the desert to-day has been facilitated by three inventions, two of which were evolved during the last war in the desert, and which were afterwards forgotten. One of these concerns the water in the radiator, and the consumption on a hot day with a following wind would be enormous, but for a simple device made by a New Zealander for his patrol-cars during the last war, and rediscovered in time for this. It consists of a long, thin metal pipe that is inserted into the radiator-cap and carried to a two-gallon petrol tin on the running-board. When the water in the radiator boils, the steam passes down the pipe to the tin, condenses and cools off, and is almost immediately sucked back into the radiator. With this very simple invention, cars will run over rough going in great heat and require only about a pint of fresh water during a day's run.

Another invention is the shadow steering compass, also a product of the same New Zealander of twenty-five years ago. This consists of a round disc in the middle of which there is a short steel rod; on the face of the disc there is a movable hand that can be clamped into any position by a small hand nut, and to operate it one has merely to take a shot with a pocket compass, steer the car into the required direction, and clamp the movable hand so that it is covered by the shadow thrown by the rod. The car can then be driven on the right bearing by the driver so steering the car that the shadow is always on the clamped hand.

The third invention is the so-called "Camel's Foot," or low-pressure, over-sized tyre, which was evolved by a British officer of the Egyptian Light Car Patrols a few years before the war. It struck him that the camel's foot was the most efficient thing in existence to counteract the yielding softness of sand, and by weighing a number of camels and measuring their feet, he arrived at the size of cover and pressure of air necessary to provide a car with tyres that would "sit" on the desert sand in the same way as a camel's foot. The cover for an ordinary touring 20-h.p. car is a 9-in. tread with a pressure of about 10 lbs. only, and for a light lorry or armoured car the tread is proportionately larger. These covers enable a motor-car to travel at the rate of about 40 m.p.h. over soft sand, in which an ordinary model would sink to its axles in the first ten yards.

LENINGRAD AND THE FORTRESS OF KRONSTADT, Russia's naval base in the Gulf of Finland—*Drawing by D. Macpherson*

One of the cities on which the Germans concentrated their efforts is Leningrad, former capital of Russia and now second in importance only to Moscow, the present seat of Government. Kronstadt is the commercial harbour of Leningrad—and even more than that. It is Russia's stronghold and naval base in the Gulf of Finland. To connect it with Leningrad, a canal (now deepened to 31 ft. throughout) was constructed some time ago, as indicated in the above drawing

LENINGRAD

HOME OF THE RUSSIAN NAVY

By F. BOWEN

EVER since the end of the last war Leningrad has been the real heart of the Russian Navy. It was founded by a stroke of the pen by Peter the Great in 1703 on a desolate marshland, which he had captured from the Swedes. The island of Kotlin, on which Kronstadt is situated, divides the two main entrance channels and protects them against attack by sea. The fortress was built at the same time as the city, on a very small scale to begin with, but with possibilities of almost indefinite expansion, and St. Petersburg itself was well defended by batteries. Shipyards were established there with imported technicians supervised by the knowledge that the Czar himself had picked up at Deptford Dockyard. Most of these technicians were Scotch, and, until recently, their names have been perpetuated in Russian men-of-war.

Before long-range gunnery was introduced Kronstadt was regarded as the most formidable fortress in the world, the main defences being five colossal three-decker forts which defied the Anglo-French fleet during the Crimean War and a less pretentious, but far more efficient, work called Fort Constantine, excellently sited to protect the two channels to the capital. In addition there were numerous batteries and minor works.

The beginning of the ironclad era saw the Russian Navy concentrating their construction, as far as the Baltic was concerned, on the Leningrad area, so that Kronstadt was constantly strengthened and modernised. As their size grew, a ship canal was cut through the shallows between Kronstadt and the city, being completed in 1888 after thirteen years' hard work. This channel is still in use, although it has been greatly improved and deepened, but the harbour of Kronstadt was generally used for the fitting out of the ships built in the city itself and for their accommodation afterwards, the Ministry of Marine at St. Petersburg being within easy reach.

When Hitler came into power in Germany and made his hatred of Russia the principal plank of his campaign, the Soviet Government realised that they would have to build up a navy and modernise all defences. At that time there appeared to be no chance of their regaining possession of the Baltic republics and, although the capital of the country had been removed to Moscow, Leningrad was still the principal business town. The dockyards were therefore turned over to naval work again, beginning with the completion of some of the ships which had been laid down before 1914. Foreign machinery was imported and before war broke out the area possessed four first-class shipbuilding yards in addition to smaller ones, three big marine engineering works and the dockyard at Kronstadt. The fifteen-mile canal between the fortress and the city was deepened to 31 ft., and in 1937 plans were completed for the construction of three 35,000-ton battleships to be built at Leningrad although the guns, armour and boilers would have to be ordered from abroad.

At the present time it is probable that Leningrad may be safely regarded as impregnable from the sea, especially considering the small number of bombarding craft possessed by the German Navy. The fortresses and dockyard ought to be able to defend themselves against air attack as well as Malta or Gibraltar although the shorter distances involved, permitting the German bombers to load up and return to the attack in ceaseless waves, has to be calculated. From the land side it may be another question. Until recently at least, all the main defences were against the sea and although the progress of the mechanised German Army through successive countries has no doubt been studied by Russia, and guarded against as far as possible, the difficulty of creating an entirely new defence system is obvious. With the naval base would go Russia's vast submarine fleet, the great mystery of the naval world at the present time. With this fleet in being the danger to Germany's Baltic supply lines is obvious, but if it fell into German hands they would certainly make the utmost use of it against us in the Battle of the Atlantic.

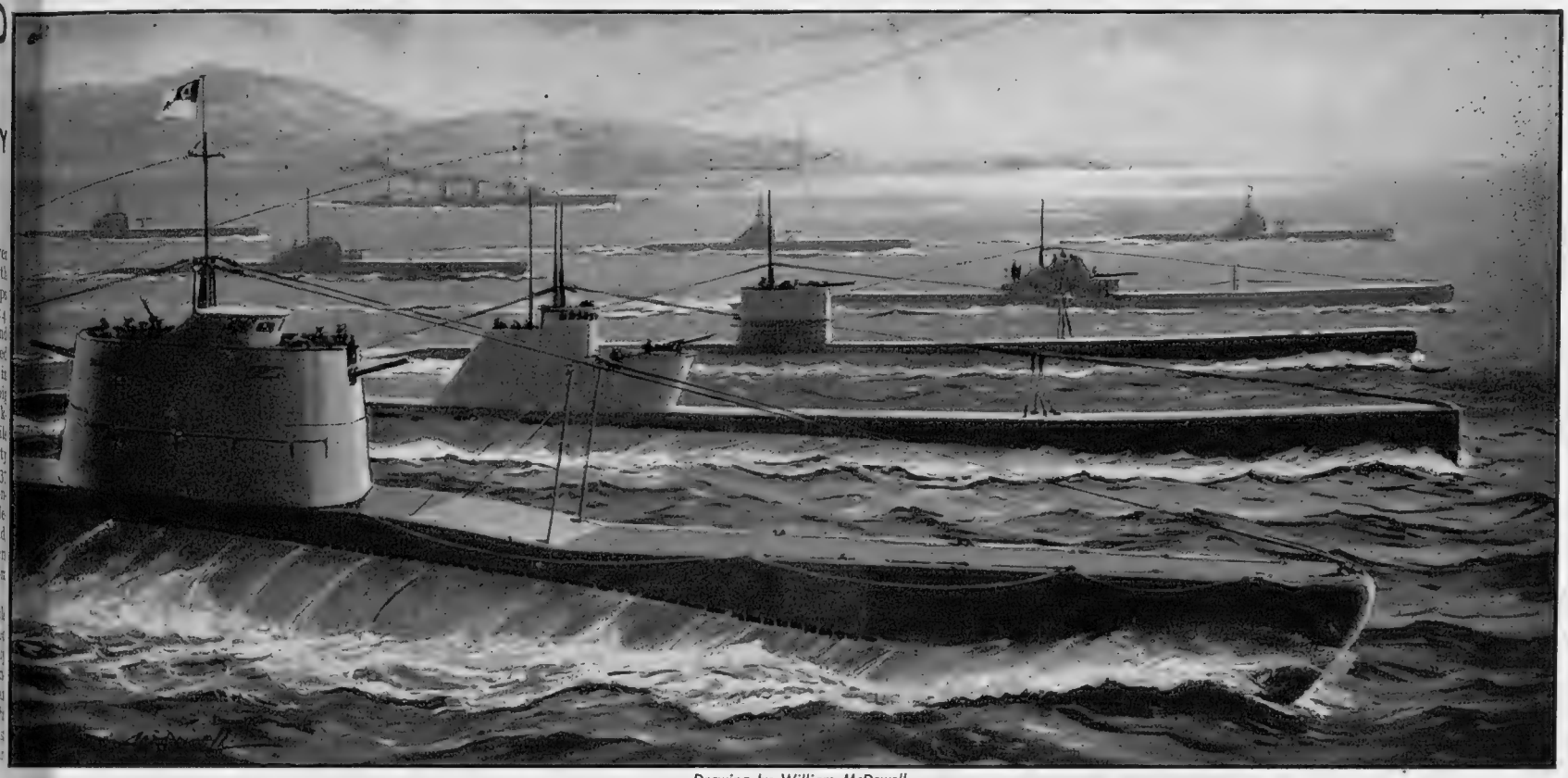
The Black Sea Fleet, which is kept entirely apart from the Baltic, has bases at Sebastopol and Novorossisk, and Germany will no doubt pay equal attention to these as their retention might constitute a danger to their plans of working through to Iran.

COMMANDER-IN-CHIEF OF THE RED NAVY: There are four Soviet fleets, based in the Baltic, Black Sea, Arctic and Pacific. Admiral N. Kuznetzov, only thirty-nine years of age, is in supreme command of all of them

SHIPS OF THE BALTIC FLEET AT SEA STEAMING IN LINE AHEAD: These warships are described as "flotilla leaders," but their displacement, armament and speed would make them cruisers in the British Navy

On right—

TWO RUSSIAN CRUISERS: This picture of the *Aurora* and *Profintern* was taken in the year 1929 in the German port of Swinemunde. It was the first time that Russian war vessels had entered a German harbour since the year 1914



Drawing by William McDowell

RUSSIA IS PARTICULARLY STRONG IN SUBMARINES : Here are examples of the five principal classes

There are 170 submarines with the Russian Fleet, and another 30 were being built at the outbreak of the war. Reading upwards in the above drawing are specimens of the following classes : Pravda class, built in 1936, said to be quite a successful type and capable of rapid diving ; Dekabrist class, of which there are 23, with another three of very special type ; Yakobinetz class, of which there are nine in the Black Sea ; Chuka class, of which there are 16 or more ; and Malodki class, of which there are about 50

THE RUSSIAN NAVY'S SMALL CRAFT

A Note by FRANK C. BOWEN

ALTHOUGH the Russian Navy possesses a certain number of cruisers and three ancient battleships, and has long projected some of the biggest battleships afloat, its main strength is in its small craft, destroyers and submarines. The Russian Navy's policy has always favoured small craft. In the 'eighties they built up one of the biggest fleets of small torpedo-boats in the world; in the early days of the destroyer in the 'nineties they got Messrs. Yarrow to build them the first 30-knotter when economy was tying the British Admiralty down to 27 knots, and at the beginning of the present century they were among the first to favour the submarine. Their destroyer flotillas still include several very old ships, built during or immediately after the war with Japan, but the modern fleet is based on the *Novik* which was one of the biggest destroyers afloat when she was built for them by Krupps in 1910. More recently they have gone to French and Italian technicians and have built big flotilla leaders of between 2,000 and 3,000 tons. They are well armed and have logged very high trial speeds, but the first sixteen of them are reported to be poor sea boats; the latest class of no less than thirty-six, adapted from the Italian design with many alterations, are believed to be very much better. The Navy includes 52 of these ships, 16 of the German design and half a dozen other destroyers of no importance.

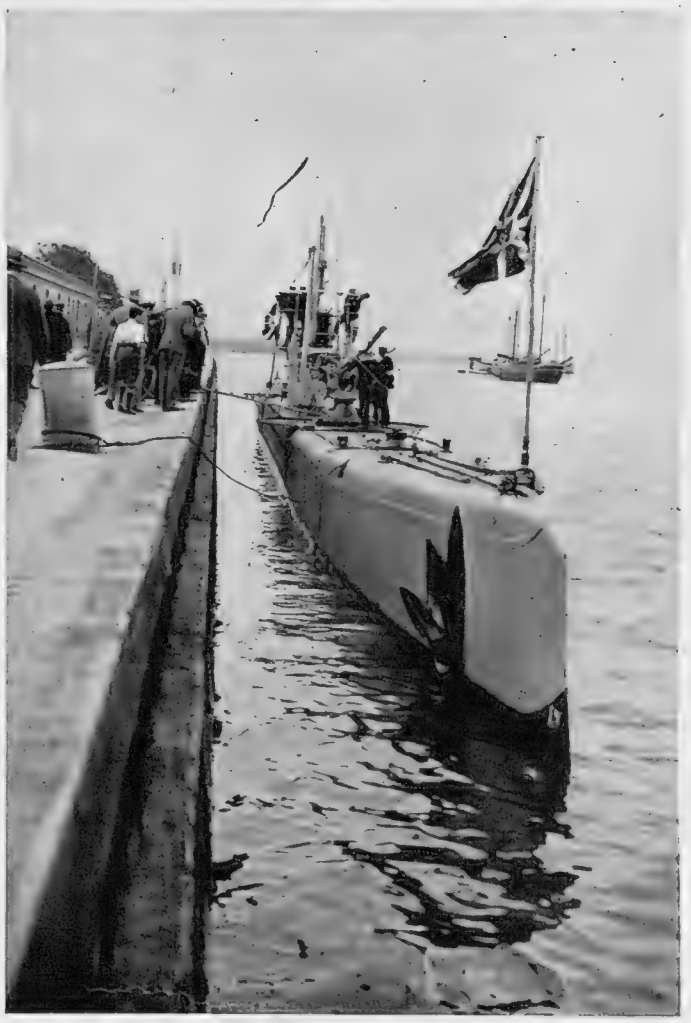
In 1932 the Russians began the construction of a class of sub-destroyer, 740 tons with a speed of 25 knots, from their own design. The first ones were overloaded and gave a lot of trouble, but the later ones are much faster and more satisfactory. The fleet also includes a large, but unknown, number of fast motor torpedo boats, a type which strongly appeals to the Russians with their facilities for mass-production in their State workshops.

It is, however, in the submarine fleet that there is most interest and most mystery. They have taken the utmost pains to prevent any definite information being published and the wildest stories have been circulated from time to time, often with a political motive. The estimate most generally accepted by naval men is about 200 all told, but it is very largely guesswork, and in any circumstances, it is necessary to strike out quite a number of obsolete vessels which are too old to be of any great use except for training purposes. The photographs which the Soviet Admiralty has published for propaganda purposes are nearly always of these old ships, whose features are well known to everybody, or else the former British submarine L.55, which was lost during the Baltic operations of 1919, but salved nine years later.

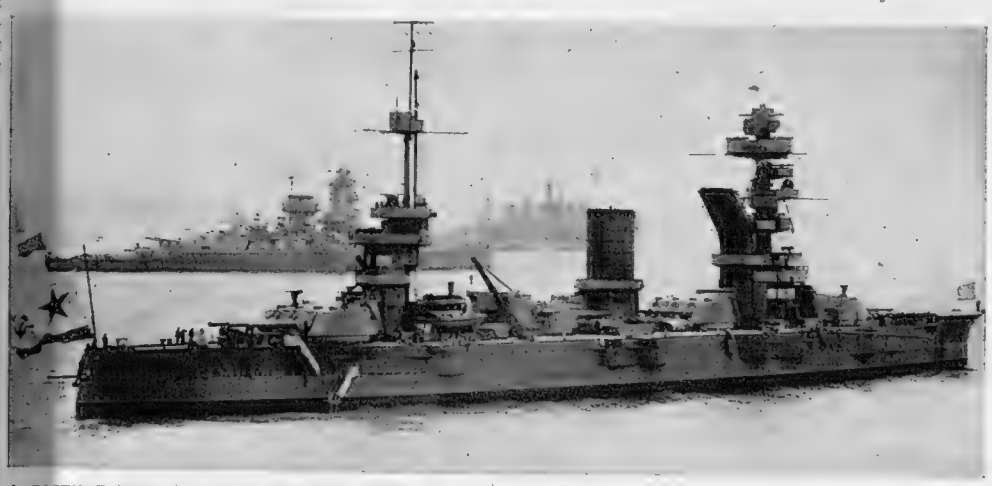
Of the remainder at least 50 are "Malodki boats," an abbreviation of the Russian words for "small submarines." The construction of these little vessels by mass production was started in 1928 and distributed among numerous yards all over the country. They have a surface displacement of 200 tons, compared with the 250 tons of the first German submarines which were laid down secretly while the Treaty of Versailles was still in force, and they were specially designed in sections. Put together in the dockyards they were small enough to pass through the canals and rivers to the White Sea or the Black Sea, and in sections they could be sent over the Trans-Siberian Railway and put together at Vladivostock. They carry two 18-in. torpedo tubes, too small to sink a modern well-protected ship, but sufficient for the smaller types or merchantmen, or to disable the bigger ships as similar torpedoes dropped from British planes disabled the *Bismarck*.

Another 50 are likely to be of the bigger coast-defence type, ranging from 500 to 750 tons displacement, although the Germans have proved that such ships can operate at quite a long distance. Many, perhaps all, of these are fitted for minelaying, a form of warfare in which the Russians have always specialised.

The remainder of the submarine fleet is believed to consist of ocean-going vessels. The great majority have a displacement of between 1,300 and 1,400 tons submerged. These are divided into many more classes than the smaller ships, showing American, British, Italian and German influence. Some of these have been built by public subscription in Russia. Finally, there is the big *Pravda* class, of 1,800 tons, of which the Russians are exceedingly proud and which they claim to be among the best in the world. As might be expected, they have been particularly carefully shrouded in mystery, and, although it is generally believed that there are only about half a dozen of them, it may well be that there are many more than that. They are designed for ocean-going work and are far too big for really efficient operations in the Black Sea or Baltic.



A SOVIET SUBMARINE IN COPENHAGEN during one of the infrequent visits of Russian war vessels to the harbours of foreign countries



A PICTURE WITH GREAT INTEREST TO THE NAVAL STUDENT : In the foreground is the Russian battleship *Marat*, a vessel of 23,600 tons armed with twelve 12-in., and other guns. Behind lies the German battleship *Graf Spee*, which was so badly hammered at the River Plate and subsequently scuttled. This picture was taken at Spithead in May 1937, when both Russian and German vessels were present at the Royal Review

AT THE HEART OF SOVIET RUSSIA

The Mighty Kremlin, the Citadel Within the City of Moscow, Which is the Seat of the Russian Government

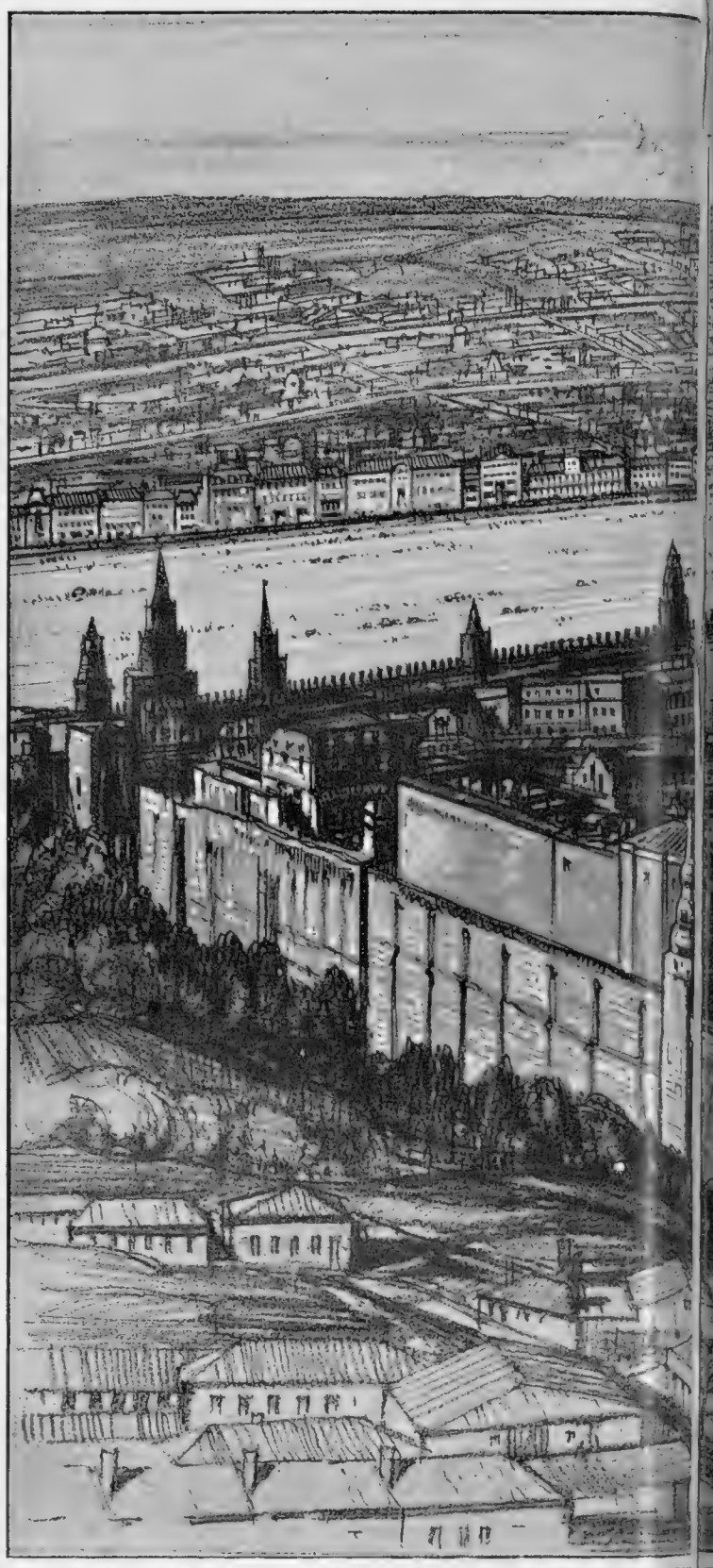
RED SQUARE IN MOSCOW, WITH THE KREMLIN WALLS BEHIND : This is the traditional place for displays of all kinds. The Tomb of Lenin is in the left centre, and behind tower the Kremlin buildings. The picture above was taken some little time ago during a May Day review of troops : it shows mechanised artillery units passing the saluting base

Shortly after the establishment of Bolshevist rule throughout Russia, the seat of Government was transferred from Leningrad to Moscow, which had in centuries past been the capital. For a time Leningrad languished in consequence ; but very soon it revived, and to-day is second only to Moscow in importance.

With the establishment of the Government in Moscow, the Kremlin at once assumed all its former importance : it was at one time the residence of the Tsars, and was one of the few places within the city which escaped the fire of 1812, when it was threatened by the Grand Army of Napoleon. When taken over by the Soviets its many buildings housed a number of Government departments and it has also been the residence of Stalin ever since he succeeded to power.

It is only within recent years that the camera has been allowed to penetrate within this spot. From the outside, looking over the 65-ft. high walls, the Kremlin appears to be filled with massive buildings and gleaming spires.

A SURPRISING STREET SCENE IN GORKY STREET, MOSCOW : For years after the Soviet Revolution motor-cars were a rarity in Russia—so much so that their rare appearances were matters for wonder amongst the proletariat. To-day however, it is quite different : in addition to the cars imported over a period of years from the United States, Russian factories are producing motor-driven vehicles of all types. In this picture, taken at one of Moscow's busiest spots, not only are there motor-cars of great luxury, but also petrol-driven omnibuses and electric trolley-buses



THE TRIANGULAR-SHAPED FORTRESS AT THE HEART OF MOSCOW of this h

AT ONE END OF THE RED SQUARE IN MOSCOW : On the left is the historic St. B Cathedral, and facing it is one of the main entrances to the Kremlin, a portion whose lofty wall can also be seen on the right. In the middle distance lies t town of Moscow, dipping down from the eminence on which the Kremlin is bu It might be mentioned that the term "Red Square" does not emanate from t Red Revolution—it was a term used even in Tsarist days !

THE KREMLIN, WHICH STANDS ON A HILL 125 FT. HIGH ABOVE THE LEFT BANK OF THE MOSKVA RIVER, with the famous Red Square beyond. It is within the walls Citadel that the centre of the Soviet Government is concentrated—*Drawing by Sydney R. Jones (from photographic material)*

Two circles, made up of wide boulevards, run through Moscow and form concentric rings within which the heart of the city lies. These boulevards may clearly be seen in the drawing above. Through the city flows the Moskva River; and on its left lies the Kremlin, the mighty Citadel wherein is concentrated the power of present-day Russia. It is situated on a hill 125 ft. high, is triangular in shape, and is surrounded by a wall 1½ miles long and 65 ft. in height. It contains a number of palaces, ecclesiastical buildings and open spaces. Since the Bolshevist Revolution many of these have been used for Governmental purposes. In the drawing by Mr. Jones above, the Red Square is the big open space beyond the Kremlin walls, to the left: at the right end of this Square is the Cathedral of St. Basil (founded by Ivan the Terrible). Just within the Kremlin walls in the foreground of the view is the Grand Palais: within the group of gleaming buildings behind this are the Convent of the Ascension, the Little Palace, the Tehudov Monastery and other historic buildings

The Kremlin presents a spectacle unique among the architectural displays of the world. It occupies a hill rising steeply from the river banks to a height of about 125 ft., and is surrounded by a wall 65 ft. high and 1½ miles long: there are five gateways leading into the sacred precincts, so rarely seen by the common herd. On the exterior eastward wall, in the Red Square (it was always called this: many people think the term "Red Square" dates from the Bolshevist Revolution; but this is not so) is the Tomb of Lenin. The Square itself has been the scene of every big Soviet demonstration of recent years.

Within the Kremlin are buildings erected 600 years ago: there are, for instance, the Convent of the Ascension, the Little Palace and the Tehudov (or Monks') Monastery—called the Monastery of Wonders and formerly the residence of the Metropolitan of Moscow. In the Convent of the Ascension is a cathedral with five gilded cupolas, the burial-place of many Russian Princesses. Then, in the Square of Tsars, is the remarkable belfry of Ivan the Great, 300 ft. high, containing thirty bells, the largest of which weighs 70 tons: at the foot of this belfry, on a stone pedestal, stands the famous Great Bell of Moscow, the largest casting of its kind in the world—over 200 tons; it was broken soon after it was cast in 1735 and has never been hung.

THE WALLS OF THE KREMLIN, with the Moskva River in the foreground: Behind rise the buildings and cathedrals of the Citadel in the heart of the Russian capital which now form the very centre of Russian authority and governance. Ice-floes may still be seen floating in the Moskva River

ONE HUNDRED THOUSAND MILES at SEA—H.M.S. "Tartar's" Wartime Steaming Record

THE Tyneside shipbuilders and engineers in Messrs. Swan Hunter and Wigham Richardson's Yard share with all hands on board H.M. Flotilla Leader *Tartar*, of the Tribal class, intense pride in the astounding steaming performance of that ship, which claims to be the first to have completed 100,000 miles at sea since the outbreak of war, in addition to having done 200 days' sea time and to having earned for herself a magnificent reputation for fighting efficiency.

These figures were not, of course, contrived without many breaks, but the wonder is that they were contrived at all, and it shows the splendid robustness of modern British naval construction, in addition to the efficiency of her ship's company.

Destroyer men after a spell of all-night duty on board

It is safe to say that no other ships of the destroyer type in the whole world, except, perhaps, the latest Americans, could have logged such figures. The lightly-built Italian destroyers and flotilla leaders whose phenomenal trial-speeds were given such wide advertisement, certainly could not have done anything of the sort.

When the Admiralty, explaining the 1935 estimates, stated that it had been decided to divide the destroyers, the "Navy's maids of all work," into two distinct classes—one essentially for torpedo work and the other essentially for gunnery—there were many people who questioned the practical value of the latter. They cost between £450,000 and £500,000 apiece, and it was suggested that the natural temptation would be to use them as light cruisers rather than as destroyers, and that they must inevitably crack under the strain, as the French destroyers did when they were used in the same way during the last war.

AN UNUSUAL VIEW OF THE BRIDGE AND FORECASTLE OF A TRIBAL CLASS DESTROYER—a picture taken from the crow's-nest: H.M.S. *Tartar*, of which we give an artist's impression above, is a member of a class which have done wonderful service during the present war. Some of this class were present throughout the chase and destruction of the *Bismarck*. The leader, *Cossack*, was at Narvik; and, elsewhere, Tribal destroyers have played their part. They are all of 1,870 tons and carry a complement of 190; speed is over 36 knots. Their cost averages just over £450,000 apiece

RETURNING TO BASE FOR REFUELLING: H.M.S. "TARTAR," one of the famous Tribal c and possibly the first British destroyer, to hav

They have proved their fighting value from the north of Norway to the extreme east of the Mediterranean and far out into the Atlantic, earning a wonderful reputation with friends and foes, and particularly with the merchant seamen whose protection is one of their chief jobs. They were designed by the late Director of Naval Construction, Sir A. W. Johns, and they have proved very comfortable and handy, good seaboats and able to maintain their high speed in surprisingly bad weather. Their standard displacement is 1,870 tons, and they mount eight 4·7-in. guns and four 21-in. torpedo-tubes, while contemporary Fleet destroyers of 1,370 tons have four 4·7's and ten torpedo-tubes.

To get machinery of 44,000 shaft horse-power, giving a speed of 36½ knots, into such a comparatively small hull naturally means that weights have to be cut down as drastically as possible. The strain of steaming at high speed, and even more of being prepared to work up to extreme speed at the shortest notice, falls hard on the boilers and condensers, and during the late war destroyers whose power and steam pressure was very much less expected infinite trouble in both departments, and had to spend a lot of time having minor mishaps put right.

The tubes are liable to leak in both boilers and condensers, and in each case it is very difficult to locate the seat of the trouble and put it right, while the result of any neglect is often very serious indeed. While he was First Lord of the Admiralty Mr. Winston Churchill took the opportunity of congratulating the engineering personnel of the Fleet on the extraordinary distances which the ships had steamed with the minimum of condenser trouble, and this is shown very clearly in the performance of the Tribal class, conspicuously H.M.S. *Tartar*, whose work and design make them far more susceptible to the trouble than the bigger ships with much heavier machinery and more leisurely duties.

Tribal class destroyers, which took part in the "Bismarck" action, and which is now celebrating a record of wartime service. She is the first of the destroyer flotilla, to have completed 100,000 miles at sea since the outbreak of the war (*see* accompanying notes)—*Drawing by Montague Dawson*

BRITISH DESTROYERS AT SEA: Two of our latest type, of the Javelin class, these vessels displace 1,690 tons and carry a complement of 183. All have been completed since 1939. They have a speed of 36 knots and carry six 4·7-in. guns and six smaller guns; they also have ten 21-in. torpedo-tubes

THE BOFORS GUN IN ACTION AT NIGHT: A picture taken by the light of the gun-flashes. This light anti-aircraft gun has a rapid rate of fire and is particularly useful against low-flying aircraft

Still another lesson learned at Crete was the necessity for more, and yet more, A.-A. guns. "The output is at last rapidly expanding," said the Prime Minister a few days ago, "but the fact remains that our outfits are incomparably inferior in number to those possessed by the Germans. Every claim has to be weighed against every other claim." Amongst A.-A. guns, the Swedish-designed Bofors illustrated here ranks very high. Numbers of these have been set up around London and other British cities, to deal with the enemy night raider

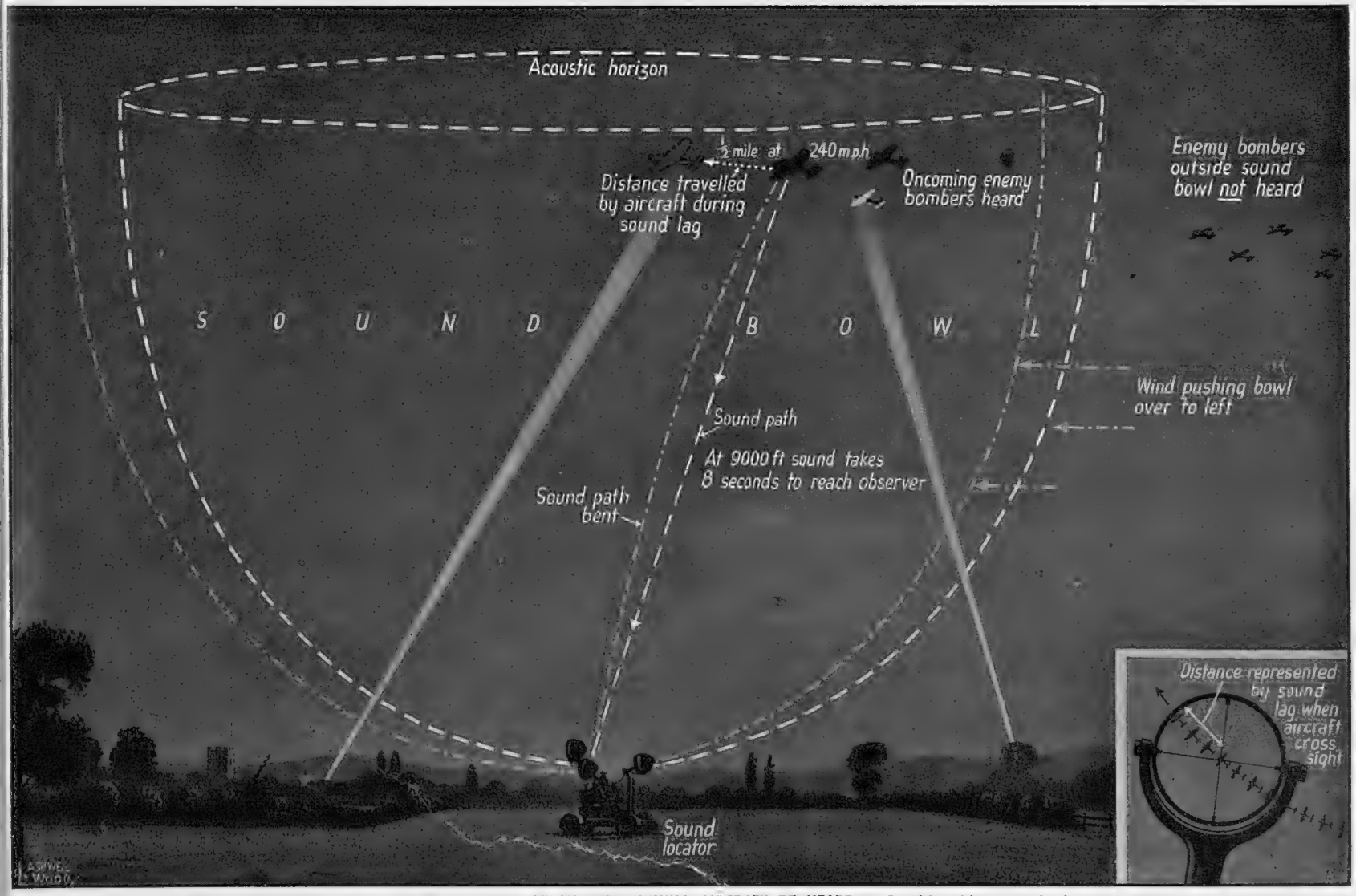
THE A.-A. GUN IN ACTION

Pictures of the Very Efficient and Quick-Firing Bofors

***On right*—GUN AND GUN CREW:** An official War Office picture which shows the position of the crew of seven whilst in action. The Bofors is a handy, quick-firing gun used for dealing with low-flying aircraft, for which it is specially adapted. Its ease of manipulation and its very rapid rate of fire make it an effective weapon. The two men to left and right set for range and altitude by means of the open ring sights. On the extreme left one of the gunners is ready to pass up a fresh "clip" of four shells

A GOOD-SIZED "CLIP": The four shells being loaded into the breech of a Bofors gun in the one action. These are fired in very rapid succession

WHAT IS THE BEST ANTI-AIRCRAFT GUN IN USE AROUND LONDON TO-DAY? That is a "dark" matter, but undoubtedly the 4·5-in. piece, depicted here, has a formidable performance. It fires at a relatively high rate of fire to a great height as compared with the more ubiquitous 3·7-in. weapon. It is, of course, a very heavy gun, especially with the steel armour shield seen in the picture; this is to protect both mechanism and gunners. In fact, its full weight is 16 tons. Ordinary comparison of the 4·5-in. and the 3·7-in., however, does not reveal the chief advantage of the former. It fires a much heavier shell, which reaches the target very quickly, outstripping all competitors. This is important in these days of fast-moving aircraft. You see the containers of these heavy shells in the picture. The propellant inside is the famous tri-nitro-toluene, or T.N.T., also used in high-explosive bombs



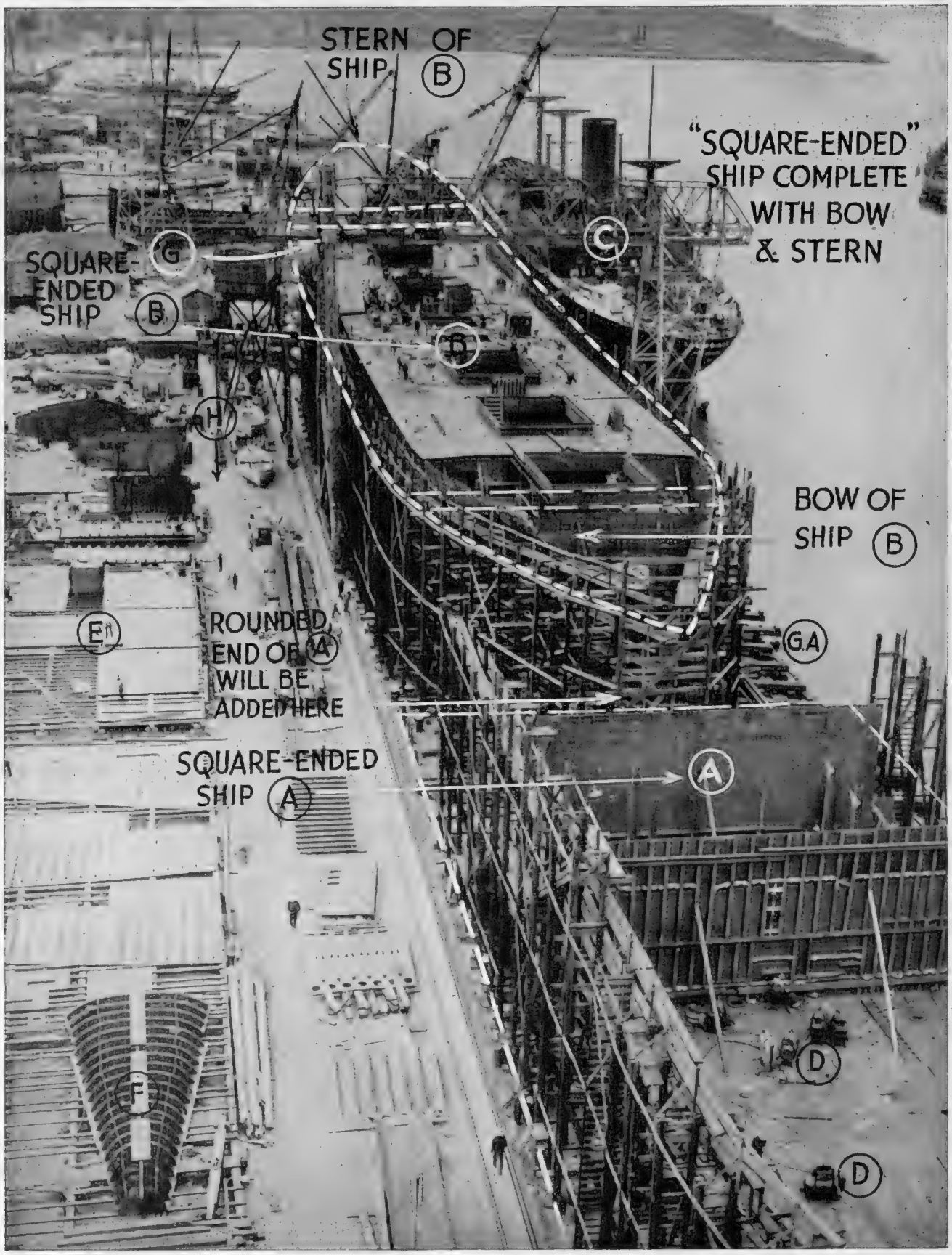
THE "BOWL OF SOUND" WITHIN WHICH ONLY CAN THE SOUND OF AN APPROACHING AIRCRAFT BE HEARD: Outside this area it is not audible. Furthermore, even within the "Bowl" the sound waves do not travel in straight lines, but are bent in the manner shown—*Drawing by L. Ashwell Wood*

The question of aircraft location has very largely been solved by Radiolocation: yet big problems still remain for the A.-A. gunners on the ground, who have to work with sound locators, predictors and other similar devices. One of these problems, and a very big one, is outlined in the drawing above: to quote from a useful little work, *Defeating the Bomber*, just published by Mr. H. E. Wimperis (past President of the Royal Aeronautical Society), "not merely does sound proceed slowly, but it fails to travel in a straight line. Its path curves whenever the temperature of the air changes, and in the atmosphere it always does this with change of altitude. Moreover, sound is carried by the wind and its path is thereby deflected. The effect of all this is that a sound made at some spot on the earth's surface does not, as might have been expected, spread out equally in straight lines in all directions. Sound waves which start in a horizontal direction gradually get turned up like the rim of a saucer. Inside this acoustical bowl, if so it may be termed, the sound can be heard, but not outside it. The inverse is also true. An airplane flying outside the bowl cannot be heard by a ground observer at the centre of our bowl. On days with no wind this may mean that an airplane ten miles away flying at 10,000 ft. cannot be heard at all. This ten miles is sometimes called the acoustical horizon. As the airplane approaches it will presently reach the bowl surface, and as it does so will burst into sound in the observer's ear. When a wind is blowing, the bowl behaves as if it were pushed in on one side (the downwind side) and pushed out on the other. Since the wind may change rapidly with height, and the temperature too, it will be realised that the path of a sound ray cannot be accurately foretold unless all these items of meteorological information are known, and often they are unprocurable just when they are wanted. It has been suggested that in order to overcome the bowl effect listening-posts should be placed in tethered balloons flying at 1,000 ft. or more. But this cannot be of much service, since the least wind produces so loud a whistling noise at the balloon as to mask the distant and relatively weak sound which it is desired to detect. It may be asked why it is not practicable to screen out the unwanted sound and listen only to the wanted, just as is done in radio listening. Radio, however, is much more sharply tuned than airplane noise. With sound waves it would be no easy matter to achieve, even if the wanted and unwanted sounds were of comparable intensity, which, in fact, they are very far from being"

NEW METHODS BY AMERICAN SHIPBUILDERS:

A Note on the Latest Plans to Provide Shipping Quickly for the All-Important

BATTLE OF THE ATLANTIC



A SCENE IN THE SHIPYARD OF THE AMERICAN CONSOLIDATED STEEL CORPORATION: This picture shows the new methods which American shipbuilders are now employing in the construction of cargo ships for the Battle of the Atlantic. In the foreground is half of one vessel which will be finished after the ship in the background is launched sideways in the channel. Beyond it is a recently-launched ship, the *Agwiprince*, whilst at the left are materials used in the construction—(See *accompanying notes*)

THE American shipbuilders, working against time in their effort to produce tonnage for the Battle of the Atlantic, are using the greatest ingenuity and are overcoming the difficulties caused by a shortage of skilled labour.

The Americans are making great use of the broadside-on method of launching, which has many advantages. It is only possible where there is a broad river or calm lake; in Britain it was employed for the construction of the famous *Great Eastern* in 1857, but the narrowness of the Thames at Millwall necessitated the precautions which caused her to stick on the slips for several months and which ruined her owners. Nowadays the broadside-on method is only used in Britain for trawlers and similar small craft.

Broadside-on launches are very much more picturesque than the ordinary sort; the ship taking the water at a big angle and raising a colossal wave which would cause serious damage on a narrow river, but there is no danger of their capsizing if ordinary care is exercised. The Americans launch ships up to about 10,000 tons by this means, and those in the photograph, taken in the Consolidated Steel Company's Yard at Long Beach, California, are about 7,500 tons gross.

One of the advantages of the system is that no time need be wasted. With the ordinary method of building ships on slipways running straight down into the water the commencement of work must wait for a vacant slip, but when a long waterfront is utilised for broadside-on construction any reasonable gap between ships can be used to start another job. In the picture (marked **A**) it will be observed that good progress has been made on a ship without an end. As soon as the ship astern takes the water, work can start on that end and the after-end of the next ship, marked **B**, can be started at once.

Instead of having to shunt the materials from the main line down the narrow alleyways between the slipways there is a straight run for the whole length of the shipbuilding area, and the heaviest materials can be carried down without the least difficulty or delay.

The ships are built on an even keel instead of on an inclined slipway, which naturally makes it very much easier to do the work and to move the large sections of material. A good deal of strain is saved in the uncompleted fabric.

There are naturally some disadvantages, one of which is the difficulty of supporting the outer end of big gantries for lifting heavy-weight material when the outer rails on which they run have to be lifted up whenever a ship goes down the ways. The gantry is marked **G** and the gantry walk is marked **GA**.

The Americans accelerate work by using numerous portable machines, especially electric and pneumatic, which are lifted into any convenient position. (Marked **D** on photograph.) British yards do not, as a rule, use these to the same extent.

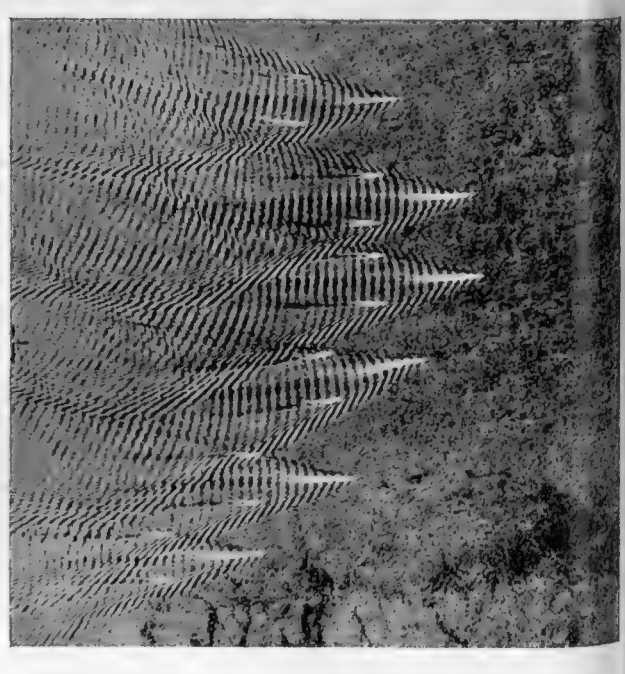
As in all modern shipyards prefabrication is employed as much as possible and the biggest sections are built on dry land, to be lifted into the ship and riveted or welded into place. The big sections marked **E**, which will be perpendicular in the ship, are obviously easier to build horizontally. The section marked **F** is upside down on land; when it is taken to the slip it will be turned over and will form the bottom of one end of the ship.

As soon as the ship will float without risk of capsizing, her place on the building ways is cleared to make room for the next ship, and she is taken to a deep-water quay to have the finishing touches, like the ship marked **C**.

The long waterfront occupied by such a shipyard, its possibilities depending entirely on the geographical situation, permits space to be found for all the ancillary jobs which in an ordinary yard have to be carried out in shops some distance away and taken to the ship. In this case her boats are all ready to be lifted on board (**H** on photograph).

An interesting touch in this picture is that, while the most modern cargo ships are being built by the most up-to-date methods, two old sailing ships are to be seen in the background, evidently resurrected for further service during the shortage of tonnage.

On right—



A NAVAL PUZZLE-PICTURE: This is an official Air Ministry photograph. It shows the intricate, closely-woven pattern traced in the sea by German minesweepers and their trailing paravanes. The picture indicates only part of the trouble caused by British minelayers in enemy waters

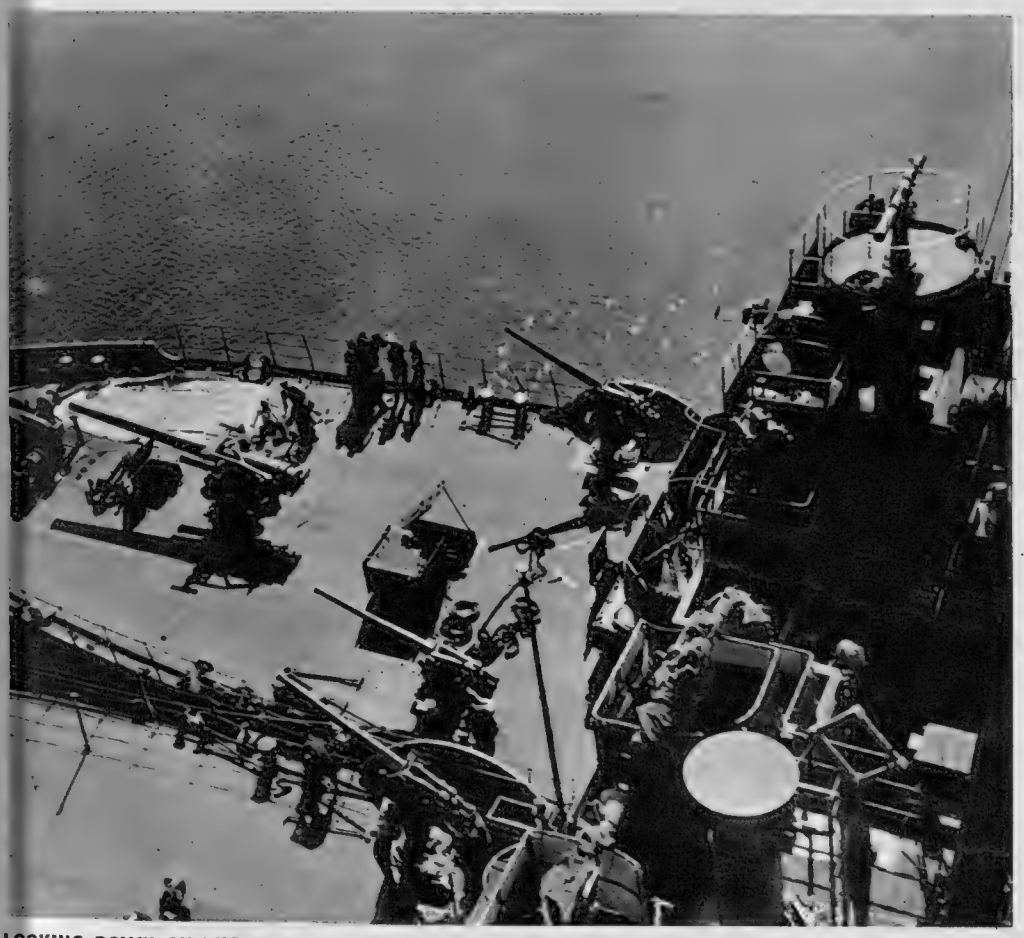
THE U.S. REVENUE CUTTERS

AFTER ARRIVAL AT A BRITISH PORT: The U.S. Revenue cutters have a good clean and polish before going into service under the Lease-and-Lend Agreement

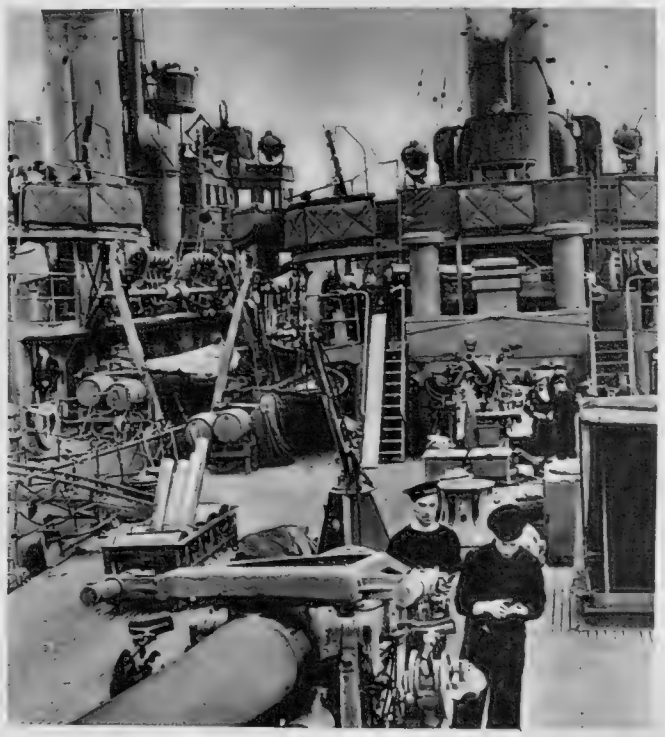
A VERY HIGH-ANGLE 3-IN. ANTI-AIRCRAFT GUN on board one of the U.S. Revenue cutters

The pictures reproduced on this page show some of the United States Revenue cutters, which will now operate with the Royal Navy under the Lease-and-Lend Agreement, at the start of their transatlantic crossing at New York, and on arrival at a British port. Down river from New York the American crews left the ships and British sailors took over. The 2,000-ton cutters are fast vessels which were developed from the craft which operated against bootleggers during the Prohibition era: they are now destined to hunt for German submarines with the British Navy, and great things are expected from them. The cutters carry a complement of 150 officers and men, and they have a speed of 16 knots. They are very heavily armed for their size

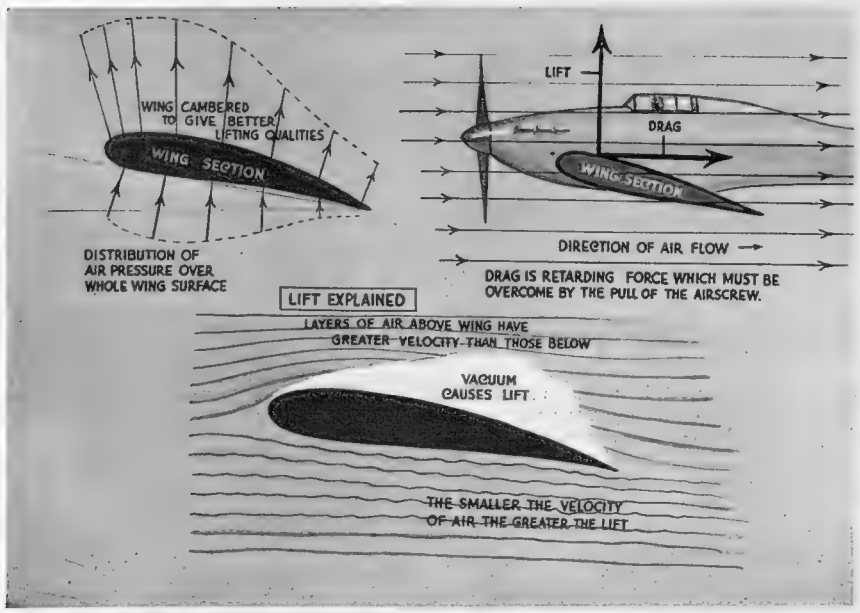
WHAT THE U.S. CUTTERS LOOK LIKE: Note the crow's-nest for the look-out high up on the single mast



LOOKING DOWN ON THE BOWS OF ONE OF THE CUTTERS AFTER ARRIVAL IN BRITAIN: This picture shows the amazing armament carried forward of the bridge on these comparatively small but very highly efficient vessels of the U.S. Coastguard Service. Guns seem to have been planted everywhere! Yet, at the same time, the deck seems free for manœuvre by the crew—and surprisingly spacious!



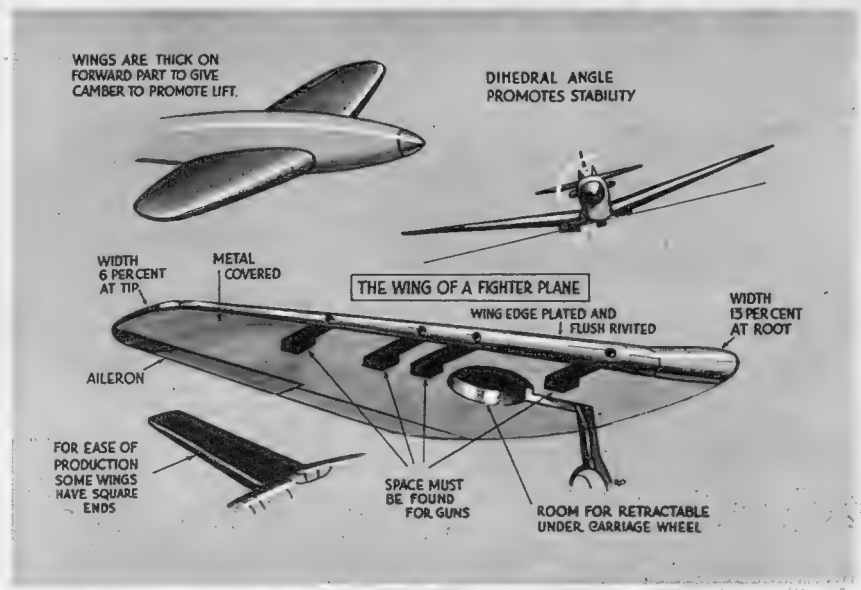
LOOKING TOWARDS THE BRIDGE: A picture taken soon after the cutters had been handed over to the Royal Navy



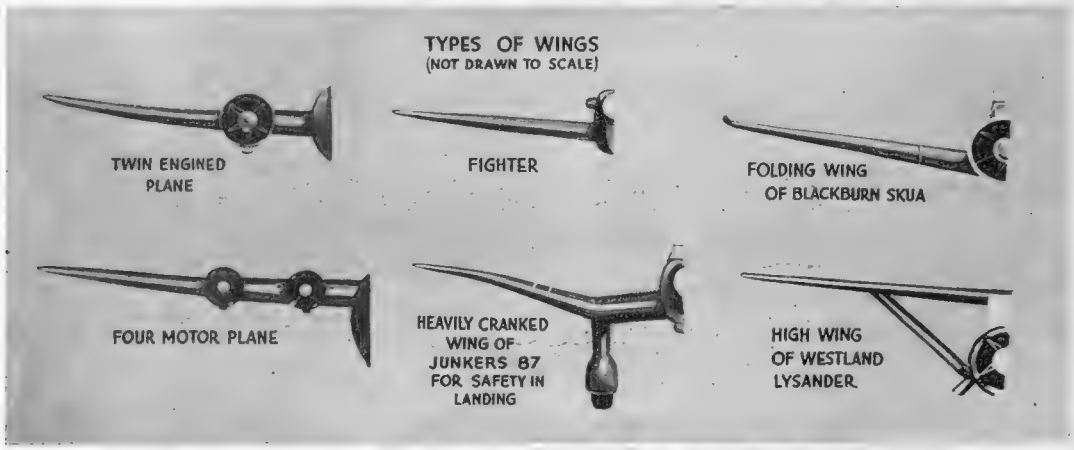
WHAT MAKES AN AEROPLANE RISE INTO THE AIR AND KEEPS IT THERE : Owing to the vacuum caused *above* the wing during forward movement the aircraft is *lifted* upwards. The forward movement is, of course, induced by the engine propeller. It is on the actual design of the wing that much of the performance of the aircraft depends

THE WING OF A TWIN-MOTOR AIRCRAFT : The Bristol Blenheim Mark IV, each wing of which has to support one engine as well as lift the aircraft

WINGS: *And the Many Shapes and Sizes of Them in Modern Fighting Aircraft*



Some characteristics of the wing of a modern fighter explained



VARIOUS TYPES OF WINGS, and the types of aircraft in which they are employed : On these pages will be found specimens of these different wings as used in certain aircraft of the R.A.F.

EVERY form of movement on or above the surface of the earth is affected in varying degree by the envelope of air surrounding it, but flight alone is dependent upon the mass of atmosphere not only for its support, but also for its progress.

It is natural, therefore, that the development of aviation, hastened by the urgency of military preparations, has led to discoveries in the science of aerodynamics which are continually bringing about modifications of the utmost value in the design of the aeroplane wing. A quarter of a century ago opinion favoured the biplane arrangement, and triplanes also—even multiplanes—were in use. Now, the advantages of the single-wing or monoplane arrangement are clearly recognised, both for bomber and fighter.

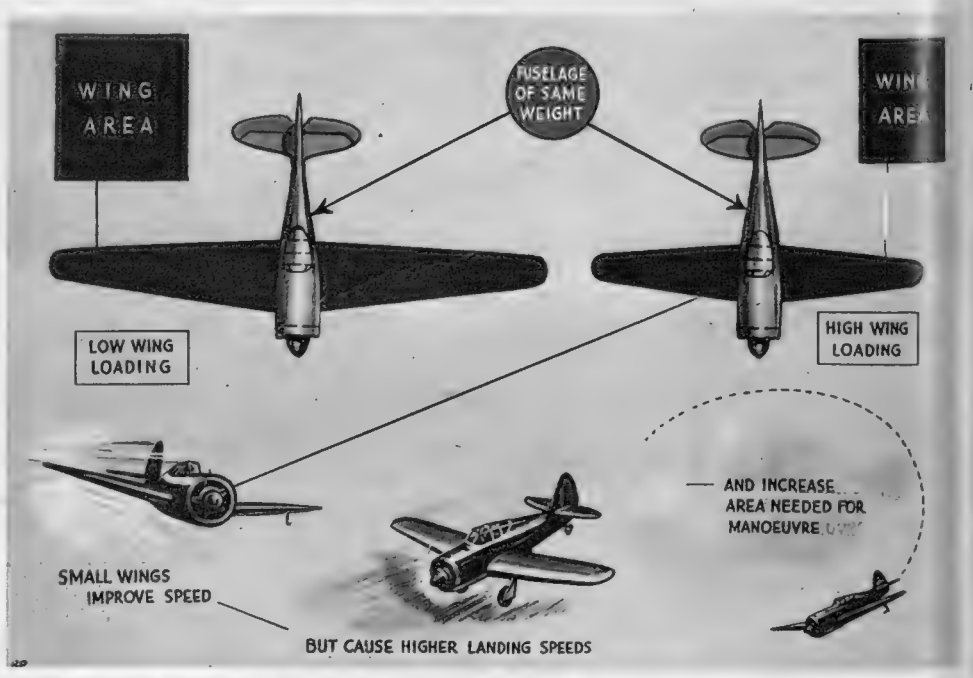
There is, obviously, a vast difference between the fighter plane and the bomber from the point of view of wing construction. Their purposes, and consequently their requirements, are plainly dissimilar, the fighter being designed for speed, rapid manœuvring and ability to execute rapid twists and turns in the air. Owing to the high stresses imposed upon the wing by these essential qualities, it suffers from troubles due to oscillation and requires more stiffening than the wing of a bomber and an entirely different camber. In the case of the bomber, which is designed primarily for the carrying of maximum loads, speed must be a secondary consideration.

The wing of an aeroplane lifts by virtue of meeting still air at an angle, which is called "the angle of incidence"; and it is necessary to know something about the properties of air before the reason for the camber as well as for the thickness of the wing becomes apparent. The modern theory upon which all wing construction nowadays is based is that air is a fluid which circulates or flows around the object which passes through it. We are accustomed to hear the phrase "as light as air," but it would be equally correct to say "as heavy as air," for the pressure of air at ground level is rather more than 14 lb. per square inch. That is to say, a vertical column of one square inch of air weighs 14·7 lb. Air being a fluid, the particles incline to coalesce, and therefore it exercises pressure in all directions—downwards, outwards and upwards.

Now, an aeroplane rises only by counteracting the attraction of gravity: by using the air for its support. The pressure of the wing at an angle causes a downward movement of a mass of air, the extent of the displacement being dependent upon the speed and span of the wing. Both top and under surfaces of the wing "lift," but, contrary to what one might expect, the lifting power of the top surface is by far the more important owing to the vacuum created by the flow of the air over the wing. This is the Lanchester-Prandtl theory as now almost universally held.

A high-speed machine must necessarily possess a high landing-speed, owing to the fact that high speed calls for small wings to obviate undue wind resistance in flight. When the engine is off for landing, therefore, the wings cannot readily support the weight of the machine, and it must travel fast when approaching the ground. It becomes necessary to cater for a landing at high speed, and this is done, and the speed reduced, by means of flaps, split or slotted, and wing brakes of various types too numerous to specify. Great care in the employment of all such devices is naturally used, as they are bound to cause various reactions in normal flight.

So great is the demand for continuous improvement and better performance, so necessary is it for the fighter to be able to master his opponents in speed and manœuvrability, or for the bomber to carry still greater loads over increasingly longer ranges, that new types are under construction as soon as, or even before, their predecessors take the air. At first, constructors employed a flat, level plate for purposes of lift, but soon the advantages of camber became apparent and a more streamlined design of the wing was adopted without, however, much increase on the thickness of the wing section. It was obvious that the struts and spars of the earlier designs must cause a loss of speed and efficiency due to wind pressure, and eventually it was discovered that if the wing were made of a thickness sufficient to contain the necessary spars and supports there was the additional advantage of greater lift due to the circulatory action of the air on the aerofoil. Nevertheless, both camber and thickness vary in considerable



THE DIFFERENCE BETWEEN A "HIGH WING LOADING" AND A "LOW WING LOADING" : To say that an aircraft has a "high wing loading" means that, to gain performance, a certain amount of tractability has been sacrificed. With a smaller wing area more skilful pilotage is required; the plane lands at a higher speed, needs more area for manœuvre—but its speed is increased considerably

THE WINGS OF OUR FINEST FIGHTER—The Spitfire, which has an ample wing area and which is yet one of the most manœuvrable fighter aircraft in the whole world

degree according to the peculiar requirements of the type of machine, up to a certain ascertainable point. By increasing the thickness of the wing the lift value is increased, and a similar effect is produced by an increase of the top surface camber. Thickness is regulated by reference to the chord, *i.e.*, the length of line between the centres of the leading edges and trailing edges of the wings. In recent designs variations up to 12 per cent. have been found to be satisfactory. Both camber and thickness are closely inter-related, an increase or decrease in the percentage of one correcting inefficiencies caused by under- or over-emphasis of the other.

Certain of the accompanying illustrations call for brief mention. It will be noticed that the thickness of the wing and certain other characteristics vary out to the tip of the wing from the fuselage "root." This is designed so as to keep the wing uniformly efficient throughout, and is an attempt to obviate the tendency of the tip to lose its effectiveness as compared with a similar area inboard. Of the various types of wings in use at the present day the folding wing is now only necessary on deck-landing types, for convenience in stowing away in the deck-hold of a ship.

The Lysander is a general-purpose machine. It is used chiefly for reconnaissance work, photography, etc. It has a high wing so as to enable the pilot under various conditions of ground warfare to get the best possible view, an advantage which obviously cannot always be provided in the specialised types of fighters and bombers. The three-point wing root attachment shown is very necessary in a fighter plane, in order to accommodate the severe torsional loads occasioned by rapid manœuvring while fighting.

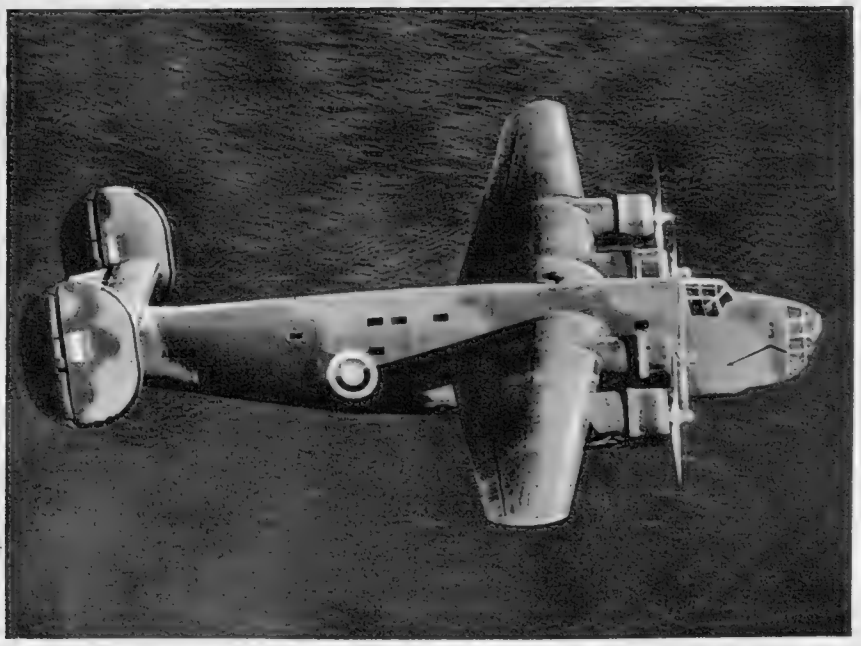
Finally there is the Junkers 87, which shows a curious cranked wing. All wing designs, whether monoplane or biplane, are slightly dihedral, being set at a small upward angle from the fuselage, but in the case of the Junkers this is greatly exaggerated. The variation may possibly have certain aerodynamic properties, but is more probably designed to provide greater safety in landing. Although the risk of crashes might be lessened when landing on rough ground, there is almost certainly a corresponding loss of efficiency in flight.

A FIGHTER OF THE FLEET AIR ARM: The adequate wing-span of the Blackburn Roc, which was planned to take a retractable undercarriage and yet to fold up for easy stowage on board the aircraft-carrier from which it operates

THE WINGS OF A FOUR-MOTOR AIRCRAFT: A view from underneath one of the latest type "Flying Fortresses." It has a wing-span of 105 ft., a speed of well over 300 m.p.h., and a weight of 22 tons. Each wing has to carry the weight of two motors

THE HEAVILY "CRANKED" WING OF A NEW AMERICAN AIRCRAFT: Similar in appearance to the wing of a Junkers 87 dive-bomber, this is the design of a new U.S. fighter aircraft, the Vought-Sikorsky, designed for use with the Navy

THE SHORT CLIPPED WINGS OF A HIGH-SPEED FIGHTER: The square wings of the new U.S. Martlet fighter plane render production problems much easier—a considerable factor when quickness of manufacture is at stake. The Martlet is now in service with the R.A.F., and has proved itself very manœuvrable and very fast



THE WINGS WHICH KEEP MANY TONS UP IN THE AIR: This picture shows the B24, a four-motored plane for which its American designers claim that it is the "world's finest bomber." The long tapered wings, of a substantial area to lift their heavy load, are here clearly seen; it is interesting to note how skilfully the engines have been installed in them

THE R.A.F.'S NEW LIFE-SAVING EQUIPMENT

The Wonderful Rubber Dinghy which now Forms Part of a Fighter's Equipment

SAVING THE LIVES OF OUR FIGHTER PILOTS : How the new life-jacket for airmen is worn ; and the new rubber dinghy which each fighter aircraft now carries : New life-saving equipment for fighter pilots who are forced down, or have to bale out, over the sea has just been tried out by the R.A.F. A coat-and-trouser life-jacket keeps the airman upright in the water, whilst a small rubber boat carried in a compact flat container attached to his life-jacket is made buoyant with air from a compressed-air bottle. The pilot can then clamber into the boat and paddle towards safety, towing with him a torch which lights automatically on immersion to indicate his exact position to rescuers. The dinghy itself is a wonderful affair—it is contained in a seat cushion 15 ins. square and 3 ins. thick. Apart from its inflation apparatus it contains a sea anchor, paddles, rations, signals, repair kit, baler and pump !

Drawings by Roland Davies

A PILOT PADDLING THE ONE-MAN DINGHY to safety after having baled out over the sea

A DINGHY AS WELL AS A PARACHUTE is now carried by every fighter pilot of the Royal Air Force

AN INCIDENT DURING BOMBER OPERATIONS OFF THE DUTCH COAST : A British bomber flies *between* the waves only a few feet above the water as a means of escape from an enemy fighter attacking from above—*Drawing by Roland Davies*

It was during an offensive carried out by aircraft of the Bomber Command that the incident recorded in the above drawing took place. Our pilots were attacking objectives off the Dutch coast when one of them was menaced by an enemy fighter. Without hesitation the British pilot went down almost to sea-level and "got into a trough with the waves on either side, and some 20 ft. above us !", as the pilot later reported. Previously the same aircraft had taken part in an attack on Ijmuiden docks, which were bombed from roof-top level ; attacked a patrol vessel a few miles away ; and destroyed a Heinkel 115 float plane, which dived straight into the sea

TWO LAST-MINUTE TASKS FOR BRITAIN

(1) An Immediate Series of Attacks on Göring's Installations Along the "Invasion Coast": (2) The Establishment of an Organisation to Fight Confusion if, and when, an Invasion Should Come

By FERDINAND TUOHY

THE very calmness recently in the West has no doubt caused the spurt in that particular form of wartime prodding referred to in some circles as "The Daily Nag." The slightness of bombing and of its accompanying cares and tragedies, the momentary absence of bomb-dazed towns and cities, have allowed more room in which to peg away at clothes coupons, eggs, coal, fish, tobacco, political warfare, and what have you (more precisely: what have you not).

Assuredly no Government was ever asked to look to so many major matters simultaneously. No sooner does Mr. Churchill take action placing Lord Beaverbrook in charge of whipping-up tanks and guns for the Army, or set in motion a Duncan-Bevin drive to put "Dunkirk" pep back into the factories and workshops, than up pops the Ministry of Information. Who 's to determine what news goes to the people, and when? And isn't it twenty-two months past time for the fashioning of The Fifth Arm, or political warfare, so that it may take its place beside Navy, Army, Air Force, and Economic Warfare? No, it is not fair to climb on the Nagwaggon already packed with people proclaiming: "Why the dickens don't you listen to me—here's the proper way to do the thing!"

The only point is—what constitutes nagging? The Oxford Dictionary says: "To indulge in wearisome fault-finding usually at a person, and to worry a person thus." Rather does it seem that in some quarters men have stretched the meaning of "nagging" to cover a vanity in their own make-up, which precludes them from learning while the learning is good. However, be of good cheer, for I 'm not going to lay myself open to nagging for a long while yet—for several hundred words.

We are now well into July. It is sound principle to assume that Russia may be unable to avoid being put more or less out of action within the seventy days Hitler is said to have allotted himself for his eastern task, and that, in consequence, the Nazis will by early September be directing their all-in invasion blitz on these islands. If Russia should endure in tank and air being, how happy we should be. But it is of course utterly necessary for us to proceed as if she won't be able to. On that account our most urgent task until September doesn't concern food or tailoring, nor yet coal nor factories, nor even the drive for guns and tanks, the great majority of which "tools" won't mature for months ahead. It concerns putting the last touches to meeting the invader on the best terms to ourselves that we can contrive; for if we lose out here, guns, tanks and the whole caboodle mean nothing.

Now, it seems to be universally accepted that the Germans will never be able to get over here by the sea alone, and make anything even approaching a success of it. Göring's *Luftwaffe* will have to play the dominant part, as it did in Crete. It will have to plaster our ports and airfields, our communications and shore defences; it will have to paralyse on a large scale and spread terror among millions. Parachutists and crash-landing crews, wreckers and "confusers" must descend in their tens of thousands. If this part of the show fails, then the Second Battle of Britain will be won as was the first; nor will all the invasion barges between Boulogne and Constanza avail our intended visitors.

One hopes, therefore, that we are paying the greatest possible attention to Göring's lairs and ground installations wherever they are to be traced from Bergen to Bordeaux, and that doesn't mean the notorious "invasion ports," but *Luftwaffe* installations and supply depots well inland—wherever they can be pin-pricked and in no matter what type of country, captive, neutral or emasculated.

What are the ground essentials of an air force, encroachment upon which weakens that air force's striking potential? The R.A.F. has but to contemplate its own ground essentials and then to ask itself: "Can we find Göring's equivalents?" If we can't, if they 're hidden, or not moved up yet, then that 's an end of it—at least for the moment. If, on the other hand, they have been tracked down to spots in foreign countries, which may not be attacked lest injury is done to the inhabitants, then that situation—an intolerable handicap to us in this hour—should be made radically known to said inhabitants by radio and leaflet.

In this matter of getting at Göring's ground invasion show now, in seeking to do as much hurt to it as we can in order to set him back a month or two—that alone would justify every bomb—seems to reside the R.A.F.'s super-mission during the fleeting period it is likely to enjoy the present form of air supremacy in the West. The concentration cannot be overdone, even as possible co-operation from other quarters cannot be too closely inquired into. I refer to demolition-landings on the Continent, and to help from saboteurs over there. If we can resuscitate feats of Zeebrugge audacity, now is the time. Now is the moment to rush in and destroy, and out again, and it doesn't matter a hoot whether the coups are mounted in Brittany, Belgium, Jutland or anywhere else. We have to think of ourselves and of the liberty we 're committed to restore to all these peoples—so why shouldn't they help by additional suffering if that 's got to be?

ROYAL MARINES PRACTISE LANDINGS FROM H.M.S. "SUFFOLK": In his accompanying article Mr. Tuohy discusses and advocates "demolition-landings" on the Continent at this present moment when the enemy is so preoccupied with his Russian campaign. The picture reproduced above is an Admiralty photograph which shows one of these landings being rehearsed. The men are a party of Royal Marines from H.M.S. *Suffolk*, the cruiser which played such a considerable part in the *Bismarck* action

Those of the saboteur breed could be exhorted by radio, and by other means, to apply their attention, anything they may be able to do, to Göring's installations, many of which are in and around big towns and cities, even capitals. Of course, the *Luftwaffe* will mount sterner guard, but they 'll do that anyway.

And so to turn to the second of what might be called two last-minute tasks.

This has to do with the minimising of confusion in England especially, should invasion of Britain get under way. Here we have nothing to learn from immense Russia and little from France which had the same population as ourselves in a space *four times* the size of England. If the civilians took to the roads over there, haven't we banked far too heavily on everybody staying obediently put in this packed realm? Haven't we thought that putting out a little invasion booklet settles the matter?

Hitler, if and when he comes, means to spread confusion here. It will be one of his trumps. The matter hardly arose on his last island enterprise inasmuch as all Crete's civilians took to the mountains. But there will be precious few mountains available here.

It seems such an old chant to go over again the components of confusion in wake of modern invasion. Nevertheless, here goes briefly for what the Nazis would hope to engender or witness:—

Confusion among the defending troops themselves, especially the non-Regular elements, due to intense rapidity of events, small areas of manœuvre compared with the Continent, seizure of hub points around and behind the defenders, fake orders and confusing wireless messages.

Gigantic blitzes on densely populated regions, maybe with gas added, so that not even the military will be able to control the exodus; resultant blocking of vital roads which would also be done by paratroop demolition squads.

Strong-points formed after crash-landings on fields, not one in ten of which is adequately blocked at this moment, and terror-raiding executed in surrounding countryside.

Collapse of the food, water, lighting and hospital systems in the bigger blitzed centres.

Breakdown of the fire-fighting services; firing of raw materials in danger areas.

Fifth Column activities drawn both from Britain herself and from her sky invaders; a star turn being our own "Alvar Liddells" speaking to us, only they'll be British Nazis with established ether accents, having studied them from recordings.

But perhaps the above are enough to go on with: if some did not eventuate, we may be sure the Nazis are keeping one or two special tricks up their sleeve for what would be their final fling.

The point is—have we developed the right organisation to fight confusion? I fail to see how anyone can answer that in the affirmative. Civil Defence under one head, operating on a common plan through the Regional Commissioners the length and breadth of the land, seems to be the missing answer. The Regional Commissioners were a very good notion, one of the best of the pre-war ones. We were told they were intended to become local dictators in case this and that part of the country had to function separately. They would enjoy complete say in their own districts in the event of emergency control.

Well, my confidence was first shaken on November 22 last. After the severe Birmingham blitz, Lord Dudley sent in a lengthy report which simply shrieked for fire-fighting on a common front all over the country. One thing, I recall, which especially sounded as a heart-cry was the case of a gentleman who kept an oil store near the centre of the city, who for four months had refused to mount a guard, about whom nothing could be done, and . . . if his shop caught fire most of the surrounding district would go up in flames.

Next, the City of London Fire. And successively thereafter the burning out of the hearts of eight or nine other great cities. The case of Plymouth was probably the most reprehensible. Plymouth was obviously bracketed in this war with Brest and Lorient. What they got from the R.A.F., Plymouth stood a good chance of getting in return from the *Luftwaffe*. Yet, even when the *Scharnhorst* and *Gneisenau* began drawing the R.A.F. to Brest, was anything commensurate with its obvious peril done at Plymouth?

But a truce to this angle or somebody will come down on me for "nagging." I just go on record as having been of Sir William Beveridge's way of thinking (even as a vast number have been) ever since London last October showed how clearly civil defence should be welded into a show of its own from the half-dozen Ministries—Home Security, Health, War Office, Board of Trade, Food, Labour (and that 's not all)—then and still hanging on to it. "The life of Britain," says Sir William, "depends on the civil defence of target towns; success or failure in the defence cannot be left to depend upon local authorities elected long ago for a different purpose."

A clutching Ministry of Home Security overlaps far too much. I wish this sprawling Ministry gave me a sense of security in regard to combating confusion, in an invasion, a struggle in which it would be paramountly involved. Surely, at this so late day, the safe course is to let the Home Office go back to being the Home Office, and for all matters of war security to be taken from it wheresoever they relate to the civil defence of the country? And so immediately to a Ministry of Civil Defence?

One might do worse than place a Trenchard-Beveridge regimé in charge. The former is still very much alive at sixty-seven, although one anticipates that his being in the Lords, or his once "authoritarian" imprint as Police Commissioner, might rule him out! Lord Trenchard has air, army and Police background that could serve well in Civil Defence; he has authority and organising power which could be re-infused into the Regional Commissions; he can get men to co-ordinate and would not use publicity with a mirror before him. A Trenchard-Beveridge Civil Defence set-up might well be able to strike a blow against the confusion Hitler plans for us.

OTHER THINGS THAN WAR . . .

"Twice Hit" by Missiles of War; The English Summer and English Cricket; Galloping Over the Garden; The Village Scrap-heap

"TWICE HIT."—The other day a mill owner wrote to *The Times* to record how he had placed part of a German bomb beside a Cromwellian cannon-ball in his office. Both, by the orders of dictators, had penetrated the walls of his old mill. (Which is carrying on.)

There are no doubt a score of similar instances. There are many scores of examples of "twice hit" in the matter of Fire. Many famous buildings near St. Paul's, which escaped the Great Fire, fell victims to Göring's Fire of London.

I recall a vivid example of "twice hit" in the recurrence of wars. Shortly before the Armistice of 1918, my cavalry brigade advanced towards Brussels and were, on the night before King Albert returned to his capital, billeted around Waterloo and Belle Alliance. The 15th Hussars were allotted barns near to La Haie Sainte of immortal memory. The troopers put their head-stall ropes through the very rings which just over a century before had accommodated the halters of the same regiment, and some of them were able to make out the regiment's name carved rudely by the Hussars of Waterloo on the wall.

Another curious coincidence. The lady who owned the chateau de Rosamel (I forget exactly where it is or was) showed me one day when I was billeted there a recent letter of thanks for hospitality from the C.O. of a cavalry regiment. She set it beside another "Collins" written in 1815 by the C.O. of the same regiment (Hussey, I think his name was).

The Calendar's Lesson.—The man who said that the English summer consists of "three fine days and a thunderstorm" was no doubt embittered by the cancellation from bad weather of a long-awaited open-air fixture, but he had authority for his aphorism in the Calendar.

According to the Calendar "summer begins" on June 21 and June 24 is "Midsummer Day"!

Why is the Feast of St. John Midsummer Day and not old Lammas (August 1)?

If Summer begins on June 21, it should officially end on September 21. What mad hatter settles these grave matters for the discomfiture of human logic? I am inclined to think it was so written for our learning. It teaches the lesson which the sad experience of every man's life proves to him time and again.

"The worldly hopes men set their hearts upon" come to them (if come they do) when the sharp edge of appetite for them is gone. When Spring comes at last, we are grown tired of waiting for her lagging steps. When Summer comes, the best of the colours are faded on the cherries and almonds and azaleas and laburnum.

And when at last a man gains the worldly ambition, the pride and enjoyment of which he had so hoped to share with his friends, those friends are gone and his own heart is too tired and scarred to take pleasure in worldly gewgaws in an existence which he sees at last to be brief and transient, and for that matter as irrational as the Calendar and as chancy as an English Summer. The English summer, officially or unofficially, begins and ends on a Note of Interrogation, and so does a man's life, and his worldly ambitions—whatever his merits—are written in the same cypher.

To work, to do kind actions to others, to show courage and patience, to keep faith, these comprise the essence of man's duty—and how immensely we could simplify our lives and cut away our disappointments if we could reach nearer to that ideal.

Of Cricket.—Let us speak for a moment of cricket. Strange as it may seem, there are more inept subjects to discuss in this life-and-death struggle. The poor cricket-journalists, gravelled for lack of matter, turn to discussing the possibilities of reviving county cricket in the years of hard labour which must follow this war. And they advance their nostrums and notions. County cricket has always found its cradle on the village greens and in the boys' schools of England, and, as long as it survives, it always must. As for village cricket, in many counties it was fast dying in 1938.

The middle-aged men still played keenly enough, but they found it very difficult to recruit the lads of the village. Local lawn-tennis courts, the motor-bicycle and the cinema lured the lads to recreations less long-drawn-out. As for the public schools, it was apparent in the '30's that cricket was no longer generally an absorbing interest. Empty benches at Lord's showed it, the boys themselves did not conceal it. For this fact the schools themselves were in part to blame. For a generation, it has been the complaint of parents that at the great public schools only the promising boys got reasonable attention from the cricket authorities; and that was true also of most private schools.

Cricket is still being played and in the same desultory fashion at Eton and the rest of the public schools. I watched it being played on famous school playing fields last week, on the first warm day of summer, and I thoroughly enjoyed two hours of a once-favourite pleasure. But those seventeen games, which were a-playing all in each other's pocket, were doing no service to cricket, and seemed, indeed, to be far more dangerous to the lives and limbs of the 400 boys engaged than the hazards of war.

A short ball pulled to the on-side time and again whistled past the skull of the next game's cover-point, or crashed into a bevy of children on a seat. No doubt, that is inevitable. But what is not, surely, inevitable, or desirable, is the fact that those games were (and have been for years) all played without supervision of any kind by older boys, beaks, or cricket professionals.

"Frater, Ave Atque Vale."—Only the other day I was rereading George Moore's *Ave atque vale* and had come to this sentence: "I had always looked forward to leaving Ireland in May, seeking the words of a last farewell, or murmuring the words of Catullus when he journeyed over land and sea to burn the body of his brother. . . ." Those words of Catullus were: *Atque in perpetuum, frater, ave atque vale.* When I was reading those words, a message came to me to set forth across land to do exactly what Catullus did. I wonder if there be any relationship so sweet, so sure, so happy, so untroubled by human passions, as that of two brothers who think as one, who have complete faith in each other, who have no rivalries, no jealousies, who look back on no misunderstandings, but on scores of acts of mutual-help and sympathy and love.

Give to the younger and weaker an elder brother, full of courage, of deep and practical sympathy, of initiative and determination not to be beat which make light of all difficulties and all obstacles, of affection in which personal jealousy or self-interest has no part, and you give to him a possession which in an imperfect world is beyond price. And, like all priceless possessions, taken away, it leaves a blank which nothing can ever replace.

For fifty years and more I had that great possession and now it is taken away at a time when, I think, it is most needed. All justice and all logic cry out to me to remember the blessing of half a century and to be thankful. But grief is selfish and unreasonable, and in times of sorrow "for ever" is a long, long time whether it be measured in weeks or months or years.

"Ha! A Play Toward."—Into my private wood and garden somewhere in England rolled at 3 a.m. a great mechanised army from the Dominions.

They came (it is needless to say, for "property" rights mean nothing nowadays and mimic war is the image of war) without so much as a "by your leave," and by 7 a.m. they had lighted their fire in the tinder-dry peat and trampled a dozen lanes through the bracken and over the shrubs.

They had inspected the kitchen garden before we were up and found the strawberries very promising (but, luckily, not ripe). The hens were late that morning and no eggs were yet laid. As the day wore on, the children's lessons began. They were that morning rehearsing their summer open-air play (Scenes from *Pride and Prejudice* and *Midsummer Night's Dream*). The roar of transport made the words difficult to hear or to say. Worse (or better still, an audience of some score of bronzed Imperial troops ringed the sylvan stage.

At first I was angry at the unheralded invasion and especially because fires in our peat cause such devastation. But when I came upon the trespassing audience of the children's play and realised how much they were enjoying the mere *seeing* of children playing in a pretty setting, all grievances vanished. The men were so disarmingly charming, and it ended in the sergeant promising to spend his next leave with us for fishing, while "Mr. Collins" and Elizabeth went off hand in hand with the soldiers of the Empire to show them the sights.

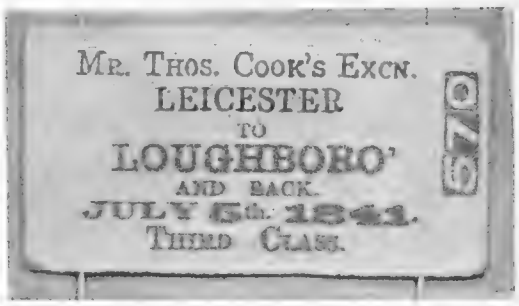
Scrap-Heaps.—There is cheering news in the promise that central authorities are positively to stimulate our rural district council in the matter of scrap-metal dumps. As the war has dragged on, the village scrap-iron dumps have rusted into the ground and grown ever larger and ever more numerous. I have never seen any one of these dumps reduced, except by the pilfering of villagers, who find a use for mesh wire discarded by their richer neighbours, or for bedposts to keep that wire in place round chicken runs.

Some of these dumps must now look from the air like R.E. stores and important military objectives. But in fact they are nothing more than permanent, free Caledonian Markets for any pickers-up of unconsidered trifles. And how will the central authority proceed to stimulate our R.D.C.? That is the question. Others have tried and failed. Our R.D.C. is rather like its own scrap-heaps: an immovable mass of rusty junk, neither useful nor ornamental.

Still, we are not forbidden to hope, and, if these hideous village blemishes are reduced in size, we may be tempted once more to bring our salvage to local centres. In the last six months we have all realised the futility the centralising and enlarging these permanent eyesores to be village monuments to the rottenness of rural local government.

J. G.

THE WAR REVIVES THE OLDEST COAL MINE IN BRITAIN: This mine is situated on the Yorkshire moors. After a life of over a hundred years, it was closed down as unprofitable. Nevertheless, there is still a good supply of the best coal, and with current prices so high the mine has again gone into production. Its output is 70 to 100 tons daily. "Jennie," the horse supplies the power for the pit shaft



THIS TICKET MADE HISTORY

Many railway tickets of to-day are similar to this one printed 100 years ago for the first excursion organised by Mr. Thomas Cook, temperance advocate and lay preacher. Five hundred and seventy people travelled from Leicester on July 5, 1841, for a temperance demonstration and paid 1s. each for the return journey—about two miles for a 1d. Enthusiastic crowds greeted the "pioneers." Mr. Cook saw his opportunity, made travel his business, and won world fame. Among his most notable exploits was the Conveyance in 1884 of the entire British Army and equipment which went up the Nile in the attempt to rescue General Gordon. He was one of the outstanding personalities of Victorian times, and died at Leicester in 1892 at the age of eighty-three, but the "Man from Cooks" is immortal

WOMEN IN UNIFORM

Types of Englishwomen who have Volunteered for Wartime Service in the Uniformed Branches

DESPATCH-RIDERS OF THE MECHANISED TRANSPORT CORPS : In addition to ambulance driving, telephone operating and other duties, the women of the M.T.C. now have their own despatch-riders. These girls will be used to keep communications open during air raids and at other times when telephones are out of action

WHEN A GIRL OF THE W.A.A.F. FALLS ILL : In the West Country, whence this picture comes, there is a hospital specially given over to the W.A.A.F. for members who might fall ill when in the Service. R.A.F. nursing sisters take charge of the patients in big, brightly-decorated wards such as the above

TRAINING TO BECOME DENTAL MECHANICS : At a Royal Air Force station near London members of the W.A.A.F. are learning to become dental mechanics : they are taught every part of the trade, from the handling of the various forceps to the modelling of a new set of false teeth

A WOMAN RIDER OF THE A.T.S. : An Inter-Services Team Trial has just been carried out by teams from the Army, Home Guard, A.R.P. Services and A.T.S. Here is one of the last, Private Phipson, skidding her way through a patch of rough going

BATTLEDRESS AND GAITERS FOR THE A.T.S. GIRLS WHO OPERATE THE KINE-THEODOLITE : Thousands of young women are needed for various duties in the A.T.S., and special recruiting is now proceeding all over the country. Girls of this branch of the Service, who work in co-operation with the Royal Artillery, now wear the Army's battledress and gaiters when actually on duty at the gun-sites

The World of Books—By Vernon Fane

WAR, HENS, AND OMELETTES

The Darting Vivacity of Lin Yutang; Sadie Thompson in Paradise; A Restoration Rake; Carthage in Colour; Michael Innes Amuses Himself; What Napoleon Said to Hitler

MR. LIN YUTANG'S WITH LOVE AND IRONY (Heinemann. 10s. 6d.), is a collection of essays, sketches and impressions which have all the darting vivacity of an aviary of birds.

He writes of everything, from bed-bugs to Bernard Shaw, from mandarins to the British Empire. For those who have read this writer's previous books, his themes will be familiar. He gives us little that he has not touched on before, but always with a renewed freshness. Above all, he brings humour into his observations on a crazy world—that great, good-tempered, tolerant humour which is perhaps the most lovable of all Chinese qualities.

His chapter on England is delicious. England is great because she alone of the Western countries has learned something of the Doctrine of the Golden Mean (which is a flowery way of saying compromise), and the British Empire can never fail because it is so terribly decent. He advises American women to forget their notions of independence and settle down to look after men and have babies instead. But in a later chapter he says that, speaking as a man, he is sick of ruling the world, anyway, and would gladly hand over the job to women if they are fools enough to want it. He glories in his own inconsistency, for he knows that it is the root of all wisdom and that to carry an idea to its logical conclusion is to carry it and yourself to destruction.

In a more serious vein he writes about the war. "Many foremost thinkers of to-day are rather inclined to believe that modern civilisation as we know it will be destroyed. I beg profoundly to differ. Knowing that the warring instinct is but another aspect of the instinct for living, and believing that no man going to battle has ever renounced the desire to live, I think the instinct for living is the stronger of the two, and hence cannot be destroyed; civilisation, too, or the art of living cannot be destroyed. Physically the arts and sciences may receive a temporary set-back, but I wager that after the war hens will still lay eggs and men will still not have forgotten how to make omelettes."

Mr. Donald Sloan went to the Samoan Islands in search of adventure, and found a POLYNESIAN PARADISE (Robert Hale. 12s. 6d.). When he landed at Pago-Pago, he discovered that the only hotel looked like a barn, was labelled Sadie Thompson, and "at either end of the sign, as decoration, was crudely painted a book, each bearing the title 'Rain.'" Whether or not it was the actual scene of Mr. Maugham's famous story, Mr. Sloan does not reveal, for at the moment he got there, it really began to rain, and the whole shack was quickly demolished by a vividly described hurricane.

The author was fortunate enough to be allowed to proceed to the isle of Manu'-a, where white men are not welcome, and where the natives are allowed to live the kind of life they have lived for hundreds of years. Mr. Sloan was quickly absorbed into the community as an important personage with the rank of a chief, and was able to live among these people and study their life from first-hand.

It is all very charming and delightful—in fact, an untroubled, if primitive, corner of a crazy world. How long it will continue to be so and not attract the attention of marauding tourists may depend on many things, one of them being the success, or otherwise, of this book.

APRIL FOOL, by John Lindsey (Rich and Cowan. 9s. 6d.), covers the period of the reigns of Charles II and his brother, James II; a period which is little known to most people, because it happened to fall between two far more romantic and attractive epochs, the Civil War and the days of Anne and Marlborough. The popular conception of these times is that of an immoral Court, two kings, one merry, one morose, a Great Plague and a still greater Fire. But, although there were no really commanding figures to dominate those happy, frivolous, generous, but sometimes embittered days, there were many lesser geniuses. It was the era of Pepys and Evelyn, of Shaftesbury and the Cabal, of Dryden and Congreve, of Clarendon and Danby. Another of these minor stars was Rochester.

His sole claim to fame, engendered by thirty-three hectic years, was that he excelled all his fellows (Buckingham, and the like) in his profligacy, that he had a happy knack of turning out witty epigrams and lyrics, and that he was often expelled from Court.

So Mr. Lindsey is on safe and enjoyable grounds when he attempts to awake this vain, volatile shadow. He tells his story, such as it is, well; has made sure of the facts with praiseworthy detail, and presents the very reasonable excuse, that can be applied to many of Rochester's generation, whose fathers suffered in body or in purse from their loyalty to Charles I, that his upbringing was not of a kind to encourage the boy in the right way of living. The story, although giving a good picture of some aspects of Restoration life, does not hold our attention owing to the shallowness of the central figure. Mr. Lindsey has tried to make an abandoned rake a somewhat pathetic figure. His pictures of Rochester's boyhood are well drawn, but the rest of the book is really a string of notorious adventures. So many historical novels, particularly of the seventeenth century, have appeared recently that the competition is severe. Mr. Lindsey's story can do little more than beguile an odd hour or so.

Another historical novel, this time of Carthage, in 196-5 B.C., is Mr. Jack Lindsay's HANNIBAL TAKES A HAND (Dakers. 8s.). In this tale there is an analogy to the events of yesterday, for Carthage was betrayed from within, and delivered into the hands of its enemies by the same combination of industrialists and ruling classes which brought about the fall of France.

In Mr. Lindsay's story, Hannibal tried to revive the spirit of his people by restoring to them some of their ancient democratic privileges, and by seeking response in the essentially sound spirit of the Carthaginians themselves. It was his last battle, and doomed to failure.

Politicians, merchants, soldiers, prostitutes are portrayed in a story of love, jealousy, ambition and courage, and all the time one feels the inexorable hand of doom upon the city. There is some luscious reading in this book, and although the figure of Hannibal remains shadowy and intangible, the characters of Delphion, of Gersakkon, of Charmides, of the impetuous Barak leave little to be desired in a study of human vice and virtue.

Not being particularly addicted to what are called detective stories, I have, so far, been unacquainted with the works of Mr. Michael Innes. A warm day and a hammock slung in an apple-tree seemed, however, the right kind of setting for this form of light fiction. So that, in fact, I was not prepared for a fast-moving, exciting story written with the kind of technique which renders the improbable not only the only course of action, but one which positively enforces belief in its inevitability.

APPLEBY ON ARARAT (Gollancz. 7s. 6d.) is, for me, an example of how a first-rate adventure story need not be ruined by the presence of an omniscient detective and of how a well-chosen murder or two need not hold up action while the author is busy trying to confound his reader. From the moment Mr. Innes set his exquisitely assorted group adrift in the Pacific in an inverted cocktail bar, and from the moment one realised that Mr. Hoppo's whale was another species of fish, and a tinned one at that, I knew I was going to enjoy this yarn. At the point when Mrs. Kittery had to crack Sir Ponto Unumunu over the head with a bottle, I knew that we were in for light relief on the most acceptable lines. It is perhaps a little unfair that Mr. Innes should write detective stories in the manner of Mr. Aldous Huxley in his lighter and better moments, aided by an erudition with a kindred inspiration. Pearls such as this are surely not for the undiscriminating addicts.

AN ICELANDIC PRESS DELEGATION VISIT GREAT BRITAIN AS THE GUESTS OF THE BRITISH COUNCIL: Sir Malcolm Robertson, newly-appointed Chairman of the British Council, is here seen with members of the delegation on their arrival in London. From left to right are Mr. Olafur Fridriksson, founder of the Icelandic Labour Party; Mr. Arni Jonsson, of the "Visir," and a member of the Althing; Sir Malcolm Robertson; Mr. Thoralf Smith, of the Icelandic Radio; Mr. Johannes Helgason, of the "Timin"; Mr. Cyril Jackson, British Council representative in Iceland; and Mr. Ivar Gudmundsson, of the "Morgunblad"

SUSSEX SCHOOLBOYS TEND THE SUGAR-BEET CROP: Three hundred boys from the Lewes County School are now helping with the sugar-beet crop planted by the East Sussex War Agricultural Committee at Peacehaven. The officials are very pleased with the way the boys are doing their "war work." Here they are seen thinning out part of the crop of beets

The anonymous author of LETTERS FROM THE CORSICAN (Heinemann. 3s. 6d.) has been inspired by the spectacle of Hitler visiting Napoleon's tomb after the fall of France. In a series of imaginary letters, the author addresses himself to the Austrian house-painter in the words of another conquering dictator who displays a remarkable knowledge of the economic conditions of the world to-day, of nationalist aims and aspirations, as well as of a considerable appreciation of the part the Americas are playing, and are likely to play, in the present struggle. In this connection he is able to tell Hitler how to conquer America and to point out that by subjugating this island he has not necessarily conquered England, but would almost certainly have to fight it out on the other side of the Atlantic. The Corsican also seems to have a lively appreciation of the qualities of the English gentleman as well as certain aspects of the Jewish problem. Personally, I found the letter "On the Climate of St. Helena" a pretty piece of character analysis.

"Schweppes Tonic
- of course sir!"

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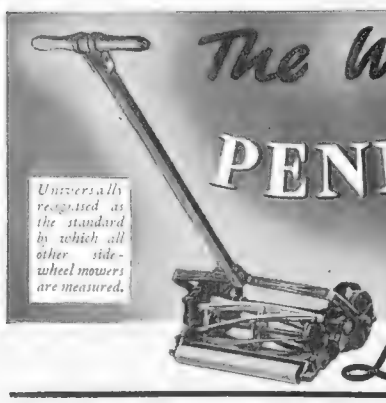

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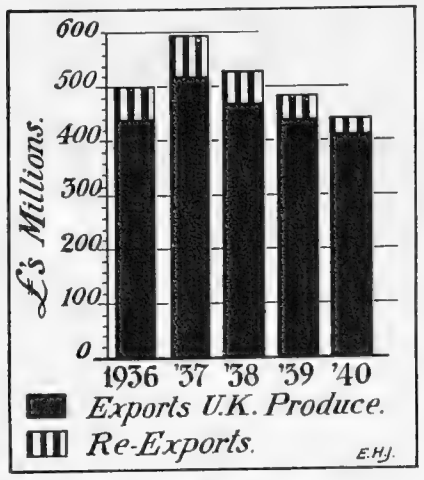
BRITAIN'S EXPORT TRADE—III

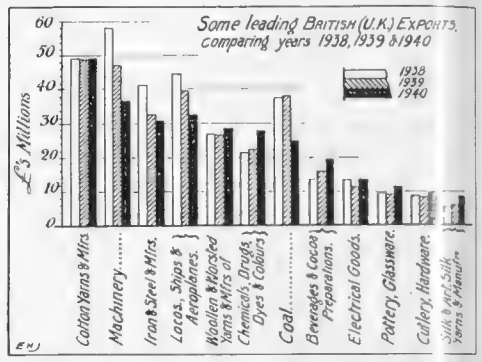
The Two Years 1939 and 1940; and our Trade with CANADA, First and Biggest of our Empire Customers

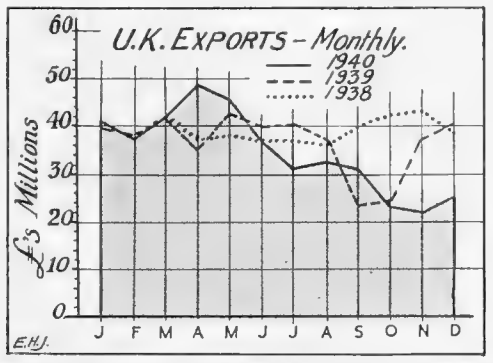
IN a previous issue we gave a brief account of the extent, volume and destinations of exports from the United Kingdom for the last pre-war year—viz., 1938. Two full years have passed since then. During the first eight months of 1939 conditions were fairly



Total United Kingdom exports for the five years 1936-40 inclusive

normal, and our exports averaged very little less than for the corresponding period of 1938. But in August—probably due to the threat of war—they dropped suddenly to only about half the normal monthly value. By the beginning of October they had steadied and actually started climbing again, till by the end of the year they actually exceeded the figures for the end of 1938.





Monthly exports from Britain for the years 1938-40

Leading exports from Britain, grouped under commodities and showing their values for the last three years

The year 1940 started well, and for the first four months our exports were higher than for the same period of both the two preceding years. But with the consecutive German invasions and occupation of Norway, Denmark, Holland, Belgium, and finally of France, a more or less steady decline took place.

Our former, but declining, trade with Western Europe was almost entirely debarred; that with the Mediterranean countries was threatened by Italy's entry into the war against us in June; our own shipping and the diminishing sources of tonnage belonging to allied and neutral countries was being sunk at a serious rate; our convoy escorts were reduced by the loss of help from France; our ships had to make much longer, and consequently fewer, voyages for a given tonnage of goods handled, and much of our own tonnage had to be diverted to military needs.

And yet, in spite of this cumulative catalogue of difficulties and dangers that threatened our overseas trade of both imports and exports, our imports for the year 1940 amounted to some £214,000,000 worth *more* than in 1939; and £180,000,000 more than in 1938. Our exports in 1940—viz., £413,000,000—were only 6 per cent. less than for 1939—with only four months of war to it—and only 12 per cent. below the year 1938. The average for the last ten years was £423,000,000.

Not only so, but, although the value of our exports of certain big lines fell off heavily by anything up to £12,000,000, as in the case of coal, and of £10,000,000 for machinery, some items actually showed quite a decent increase over the previous two years.

How much of these exports went to our own Dominions and Colonies? The most important of these, and the nearest of any size, is Canada.

Canada's total imports during the last pre-war year amounted to over £164,000,000. Of this, some 60 per cent. was from America (mostly U.S.A.), roughly 30 per cent. from the British Empire (of which 65 per cent. was from the United Kingdom alone, and equivalent to 18 per cent. of Canada's total imports). During the last war she took only 8 per cent. from us here.

While making great strides in her manufacturing industries, Canada is an enormous producer of the more elemental natural products and raw materials, such as agriculture—mainly wheat growing—fishing, mining, forestry and suchlike. She produces 12 per cent. of the world's wheat, and no less than 40 per cent. of the world's exportable surplus. She produces 90 per cent. of the world's nickel, one-third of the world's product of news-print and allied paper products, 12 per cent. each of the world's copper and lead.

But Canada imports many manufactured commodities which we can supply, and, in view of the present situation, she could probably take a good deal more if we could get it there. It is almost a case of shipping first and last, and all the time.

What formed the main classes of goods we have been sending out to Canada? Topping the list are woollen goods in various stages of manufacture, of which we supplied between 3½ and 4½ million pounds' worth in 1938. Cottons, yarns and manufactures of cotton and other textiles amounted to over £3,000,000 iron and steel, with manufactures thereof, about £2,500,000. Well over a million pounds' worth was exported of each of the following: beverages and cocoa products; chemicals and allied materials; pottery and glassware. Articles of clothing ran into half a million pounds, and almost as much for cutlery and hardware. A new line being developed is for flower bulbs for both Canada and the U.S.A.

But, under present conditions, the goods which are most likely to be favoured by those controlling our exports will have to more or less meet the following requirements:

(1) Goods having a very high conversion value—that is to say, the value of the finished article must bear a high relation to the cost of the raw materials from which it is made. For example, steel bought at £10 to £20 a ton turned into highly-finished goods which may work out at, say, £150 to £200 a ton, depending on the amount of man-hours spent on their production.

(2) Goods which occupy small shipping space; this will generally also imply high relative values.

(3) Goods, the manufacture of which do not interfere with more essential war products.

(4) Goods which can be placed on board at the most commonly-used ports, and avoid the time lost in picking up from one or more out-of-the-way ports. Not only shipping space, but speed in sending out the necessary ships for bringing in the more urgent imports, has to be considered.

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In Quest of Good Hotels

By ASHLEY COURTENAY

THE more I have seen of Cornwall in recent weeks the more convinced I am that it does very largely provide a solution to this year's leave and holiday problems.

Naturally, one cannot entirely escape from war alarms, but peacefulness dominates over planes, and though access to beaches is via a maze of barbed wire, what matters so long as one can bathe, laze and generally enjoy those smooth, golden sands for which Cornish coves are so famous?

In my last article, starting from Bude, we did not get beyond Tintagel, for there was much to relate. But this week we must accelerate our tour, for otherwise the summer we are enjoying at the time of writing may be over before we have completed our plans.

I am leaving out Port Gavern, Port Isaac and Polzeath this year, for I have nothing to recommend, but fortunately at Trebetherick, overlooking Greenaway Beach, with Daymer Bay and Old and New Polzeath around the corner, there is a pleasing private hotel called St. Moritz, with which I renewed acquaintance by stopping a night.

St. Moritz suggests Switzerland and the hotel has a touch of the Swiss, with its pine floors and panelling, its simplicity, its cleanliness, its balconies and its central heating for winter months. If you are a golfer St. Enodoc Links are within walking distance.

Incidentally, if you are keen on combining a little war work with holiday relaxation, Mr. Underwood, the proprietor, has about twenty-two acres under cultivation, and he will welcome some voluntary help.

Only a short distance away is Rock, overlooking the Camel River. Here I found the Rock Hotel, a fully-licensed house, still open, and a good headquarters it makes for those with a variety of interests. One can ride the Camel's back by taking the ferry across to Padstow, golf at St. Enodoc, bathing on a variety of beaches, and after sundown there is a good bar and good company.

Via the main road through Columb St. Major, with a slight diversion along the Vale of Lanherne, I came to Newquay, where I had been warned that I should be unlucky in finding any accommodation. Maybe that was true enough as applied to the immediate weeks, but I was glad to find that very excellent hotel, the Bristol, at present occupied by Benenden School for Girls, will be reopening at the end of term, from August 2 to September 20, and that the Young family were already planning a first-class holiday programme for those who are fortunate enough to be able to get a break during that period. Though there are 140 bedrooms in the Bristol, many of them having private bathrooms, it will not be long before they are all snapped up. The Hotel Bristol have a regular clientele, who, as soon as they hear that they are re-opening, will lose no time booking up. Facing the famous Tolcarne Beach, which is still open, sea- and sun-bathing can be enjoyed to the full, whilst the evening hours can be whiled away in the ballroom or more restfully in one of the many lounges.

My next port of call was via Redruth and Camborne to the Old Quay House at Lelant, which lies at the corner where the road to St. Ives branches off the main Penzance-Camborne road. As I arrived at low tide, I began to wonder whether this charming guest house should not have been designated the Old "Key" House, for not only does it lie at the key position of two important roads, but it is only six miles from Penzance, some 3½ from St. Ives and perhaps 1½ from Lelant Golf Links. Before turning in the tide had come in. The Atlantic lay on three sides of us (if an estuary can claim to be part of the Atlantic), and then I felt convinced that this was one of the places where Canute practised at ordering the water back just at the time the tide turned to ebb. The Old Quay House has been open barely a month under its present ownership, and once again I was impressed by the fact that nice owners seem to attract nice people. It 's a cosy house and one that I have ear-marked for those looking for winter residence.

The food there was good of the honest-to-goodness homely variety. I took the opportunity whilst I was at Old Quay House to revisit an old favourite of mine, the Porthledden Hotel and Country Club beyond St. Just and overlooking Cape Cornwall. Although this area may seem bleak to some people, I have rarely seen such kitchen gardens so profuse with the good things of the earth, and though I have visited Porthledden in many kinds of different weather, my combined impressions are warmth within, lots of sunshine and a friendly atmosphere. One particular thing I did note down was that almost adjacent to Porthledden are a number of cottages equipped for those who prefer family life and yet can dodge the inconvenience of housekeeping these days by living in the hotel. Provided you don't mind having your nearest town, Penzance, some nine miles away (there is a bus service from St. Just or one may be lucky enough to get a lift in). it is a grand place to live in, with the Atlantic in its various moods as one's constant panorama.

In this heel-and-toe corner of Cornwall everything seems very close to hand, and it was a bare twenty miles via Hayle and Helston, Constantine, Gweek and Port Navas to Budock Vean Hotel, which lies about 6½ miles north of Falmouth. I have written so much about Budock Vean in the past that I stand the risk of being accused of having a financial interest in it. I only wish I had! I have a recollection that Budock Vean used to be advertised as "a little bit of heaven." Certainly I have never come across anything quite so akin to my ideas of paradise. It 's an hotel where one can so quickly settle down, but it was the outside rather than the "in" which monopolised my attention on this sunny week in June. Deck-chairs and swinging hammocks were dotted about the green slopes which ran down to join the blue waters of the Helford River. There was talk of sailing, of bathing and a morning out with the lobster-pots. People came in from riding, from tennis, from golf on the hotel's own nine-hole course; others had been into Falmouth and across the harbour to St. Mawes. In the cool of the evening we sat out in the sun-lounge, and for the first time in many weeks I forgot all about the 9 o'clock news.

Mr. Ashley Courtenay is always pleased to advise "Sphere" readers of hotels, both large and small, known to him personally. Letters, accompanied by a stamped, addressed envelope for reply, should be addressed to him, c/o the Editor, THE SPHERE, *Commonwealth House, 1, New Oxford Street, London, W.C.1. Personal and telephone inquiries, however, cannot be accepted.*

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